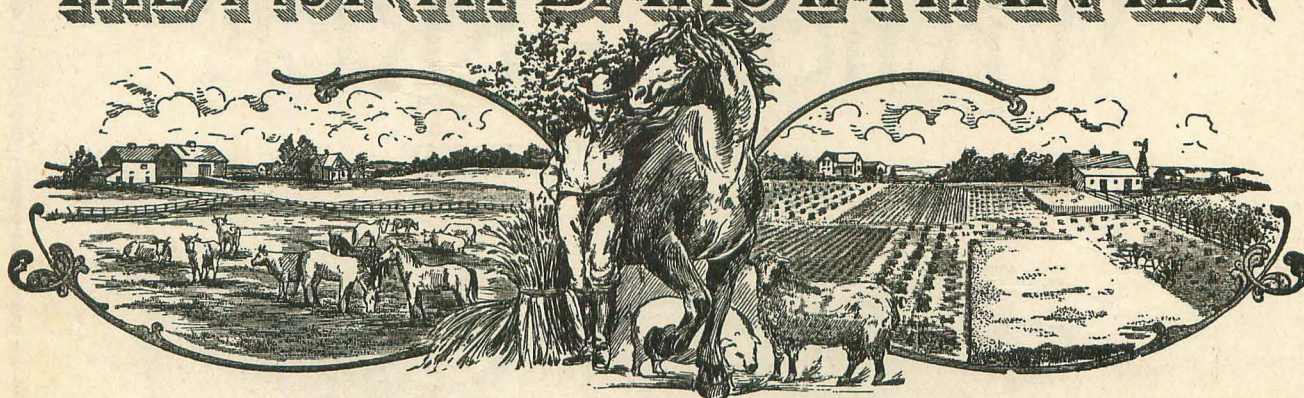


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# THE NORTH DAKOTA FARMER

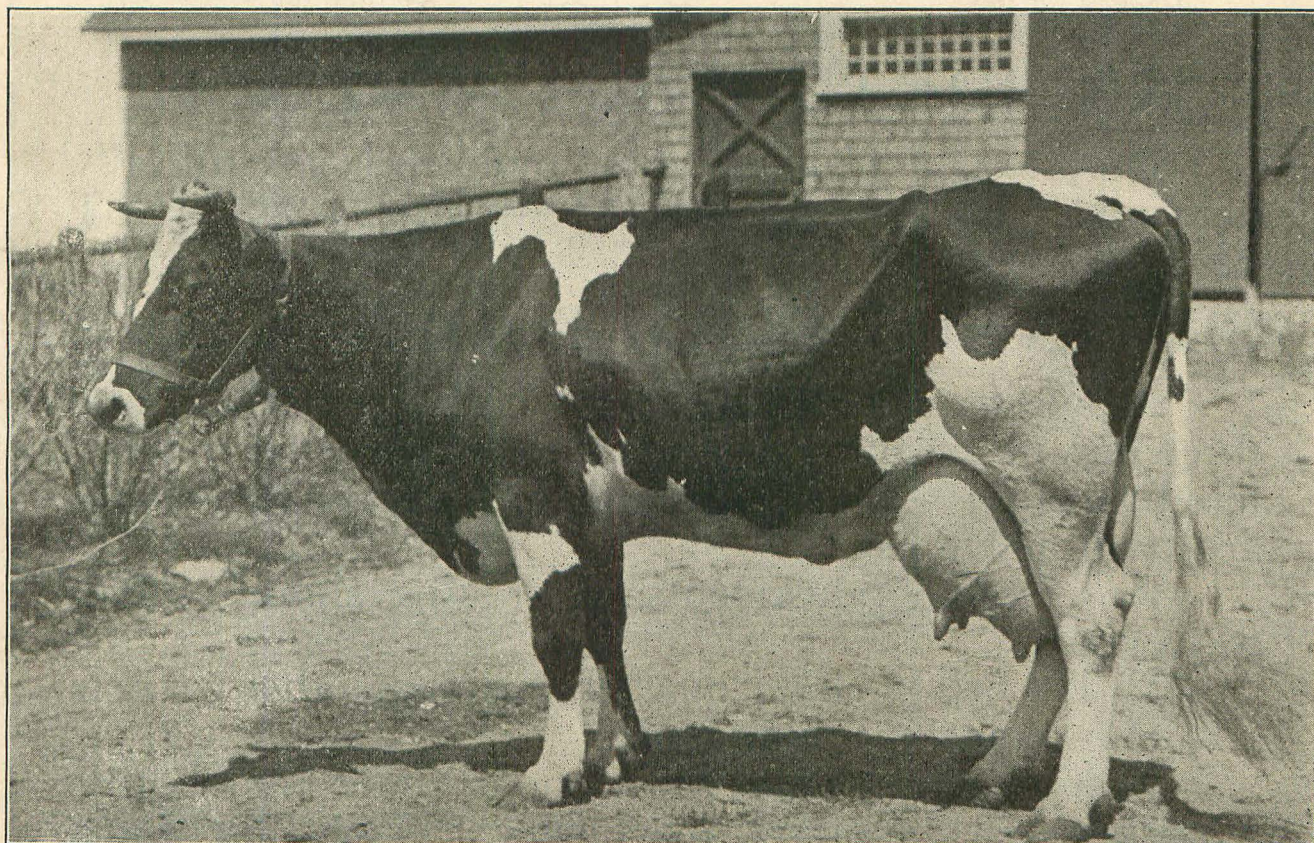


"THE NORTH DAKOTA FARMER FOR NORTH DAKOTA FARMERS"

Vol. 14 No. 11

Lisbon, North Dakota, May 15, 1913

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This remarkable cow recently completed a year's test which overshadowed all previous yearly records by her remarkable production of 29,591.4 pounds of milk in 365 days. Her butter record for the same period was 1,155.85 pounds, which is also the sixth largest butter record.

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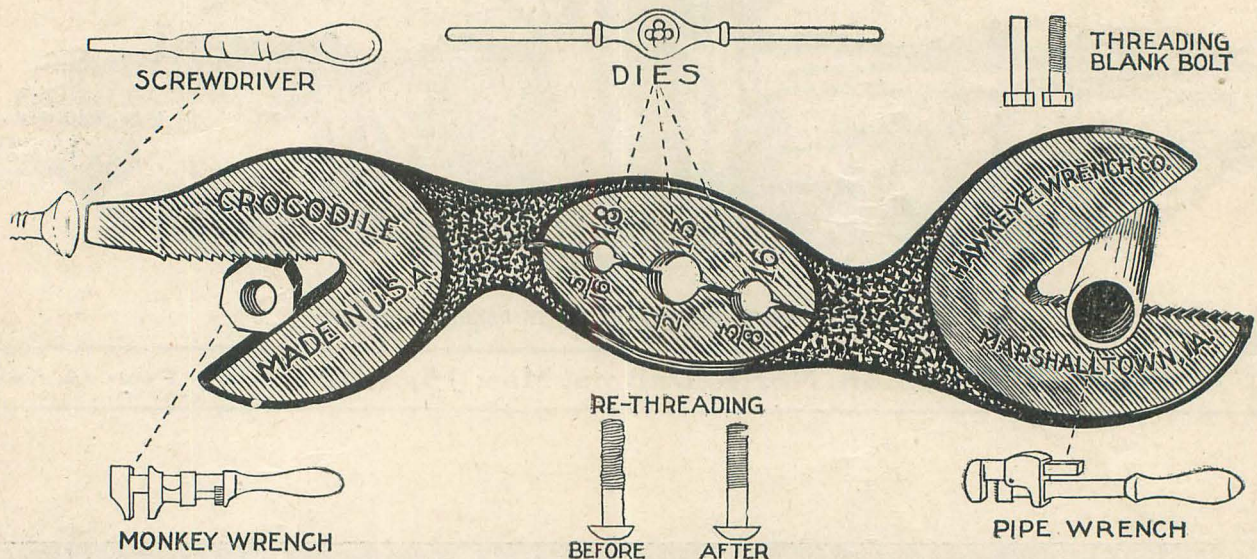
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# THE NORTH DAKOTA FARMER

Vol. 14, No. 11

LISBON N. D., MAY 15, 1913

50 Cents a Year

## Millions and Millions

By President J. H. Worst, N. D. A. C.

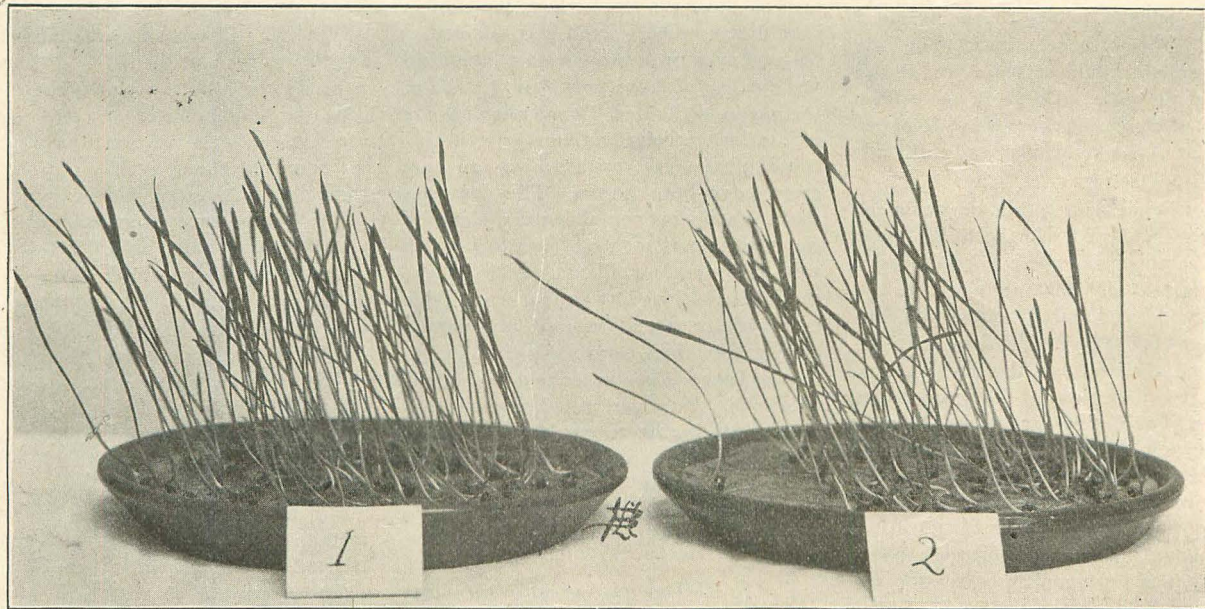
It comes handy to say "millions!" Naturally we come to think and speak in terms of millions when we discuss almost any phase of our agricultural output, whether we refer to tons, bushels, or dollars. The slightest improvement in production, whether on account of using better seed or practicing better cultivation, runs immediately into millions of bushels of added grain and, consequently,

This would add another \$1,600,000 to the farmers' income. Severe droughts, however, often occur when, if weeds were absent, there would be ample moisture for the growing crop. As a matter of fact, weeds destroy vastly more than \$1,600,000 annually. By a very careful weighing of the dry matter, in the form of weeds that grew upon a fraction of an acre, it has been determined here at the Experiment Sta-

000 bushels of wheat or approximately \$6,400,000. Taken altogether, the advantage that might be derived from the improvements above-mentioned, the account would stand about as follows:

Credit the fanning mill with..	\$1,600,000
Credit elimination of weeds	
(From crowding).....	1,600,000
Credit Elimination of weeds	
(Loss of moisture).....	32,000,000
Credit better plowing and	
better tillage.....	6,400,000
Total.....	\$41,600,00

As wheat represents only about one-half the total value of grain produced in



The Simplest Plan of Testing Seeds: One Way to Save "Millions."

millions of additional wealth for the farmers of the state. By the intelligent use of a \$15 fanning mill for a few hours during the winter, it would be a simple matter to increase the yield of wheat (on account of eliminating the weak and imperfect kernels), at the very least, to the extent of one peck per acre. This would result in a net increase of considerable more than 2,000,000 bushels for the state, which, at 80 cents per bushel, would add \$1,600,000 to the income of the commonwealth. By eliminating the weed seed, it would be an easy matter to increase the yield by an equal amount, but which is not realized on account of the weeds crowding and smothering the grain, to say nothing of consuming the moisture.

tion that the amount of water necessary to produce the weeds on an average weedy acre of ground, if available for the production of wheat instead, would increase the yield about ten bushels per acre. Considering the season during which the calculation was made, possibly as exceptional, and liberally reckoning the loss on account of weeds at a general average of only five bushels of wheat per acre, there would still be an annual loss of not less than 40,000,000 bushels or \$32,000,000. Then again by a very slight improvement of tillage, either by deeper and more seasonable plowing or one or two additional discings or draggings, it would be an easy matter to increase the yield one bushel per acre. This would add more than 8,000,-

the state, and as the same principles should apply to all other crops with similar results, we may safely add another \$41,000,000, making a total of \$82,000,000 that better tillage, better seed grain, and elimination of weeds would almost unquestionably insure the farmers of the state.

By using only pure bred sires, the improvement in livestock, moreover, should add not less than \$18,000,000 more to the farmers' income, making it possible to readily increase the wealth of the state, annually, by \$100,000,000.

These figures are astounding and for that very reason they will be viewed with incredulity. But are they wide of the mark? If so, which way? I repeat that we must necessarily, when speaking or



thinking of the possibilities of North Dakota agriculture, speak and think in terms of millions. And yet but a fraction of the state's area has been brought under cultivation.

In view, therefore, of the big things that may be accomplished by doing a little better work—work that involves but little extra time and expense for each individual farmer—would it not seem worth while for the state to make a reasonable effort to secure these results? Are we not spending a lot of time and energy on minor things—things that weigh much less for the individual or general welfare?

The \$100,000,000 indicated here is within the reasonable possibilities. Why, then is it next to impossible to get the necessary means for adequately promoting this great work? When viewed in the light of what agriculture has done and is capable of doing for the state and what the state is doing for agriculture, the most elementary principle of business reciprocity is squarely challenged.

Putting one additional kernel of wheat in each head, by means of better seed selection and better tillage, will add more than six million dollars to the farmers' income, from wheat alone. The six million dollars would be shared by all the people of the state. Does any one believe the task of increasing the yield of wheat to the extent of one kernel per head a difficult one?

Mr. Chamberlain, the development agent of the Great Northern Railroad, says that the farmers of North Dakota give away \$14,000,000 annually in the form of weed seed and screenings and contribute \$4,000,000 besides to pay the freight on the stuff, to the Twin Cities. Is that good business? Why then does not the Legislative Assembly take a broader view of the state's principal industry and provide ample funds to bring agriculture up to its splendid possibilities? This can be done by means of education for the boys and girls, the future hope of the state, and by organizing extension activities for the benefit of the present farming population.

Instead, however, a niggardly policy is pursued and the state's funds are distributed by sections and under pressure of political influence rather than for the development of the state's agricultural possibilities.

Denmark's policy might well be emulated in this state. With an inferior soil and a bankrupt treasury in 1880, her farmers took their business in their own hands. Instead of taking the crumbs that the governing power saw fit to throw to them, they distribute the bread themselves. They first eliminated the useless middlemen, then took the reins of government in their own hands, established systems of co-operation, provided money for purposes of farm improvement at reasonable rates, encouraged everybody to get

busy, made agricultural education almost universal and with what result? —the world knows the result. She advanced by leaps and bounds in wealth, intelligence, and clean government. All things considered, she is without a peer as an industrial nation. From poverty she has risen to wealth, equitably distributed, and from social and political inferiority to a wisely governed, progressive, independent power.

North Dakota likewise has possibilities beyond the dreams of the most sanguine. Her road to prosperity is along easier paths than were those of Denmark. For scarcely a stroke of agricultural improvement can be made without its mounting into millions of added wealth. And when her chief industry is made the chief concern of those in authority, then will her resources respond with unfailing as well as unwasting plenty thru all the future years. It is worthy of a trial.

## Rotation and Fertility

**Problem of Red River Valley is to put into Practice a Better System of Farming. Plenty of Fertility in Soil Can be Made Available by Use of Clover and Manure.**

By J. G. Haney, of I. H. C. Agricultural Extension Bureau. Tri-State Grain Growers' Convention, 1913

### An Inventory

The fertility in the soil of any particular farm is the basis from which the subject should be studied. Land is considered to be good or poor in proportion to the yield and quality of crops grown on it. Thus, the region of the Red River Valley has the reputation of being extremely fertile because of the ease with which immense crops have been grown. This indicates that the soil must contain an abundance of the principle elements of fertility which were easily made available, and so long as the land continued to produce profitable crop without the addition of any manure or rotations, there certainly was no reason for the farmer to be concerned as to these questions. However, the land that has been producing for twenty to thirty years is unmistakably showing a very marked decrease in yields. This being the case, the question of the amount of fertility contained in the soil should be given consideration.

The North Dakota Agricultural College has made such determinations, the results of which are published in bulletin 100.

The composition of average soils of the Red River Valley in North Dakota were determined from samples taken at Bathgate, Fargo and Wahpeton.

The top six and two-thirds in. of this soil contained at the time of analysis enough of the essential elements; nitrogen, phosphorus and potassium to produce crops of 25 bu. of wheat per acre as follows: Nitrogen, 140; phosphorus, 209; potassium, 369. Why then has the yield of crops decreased? Certainly not from the lack of soil fertility. The soils analyzed had been previously farmed for nearly twenty years and no special effort made to maintain their fertility, hence an earlier analysis would doubtless have shown correspondingly more of these elements present, but in no sense can the indict-

ment be placed against the point of the elements of fertility.

### Decrease Due to Improper Methods

The soil still contains an abundance of the plant food elements, and it would appear to be both unbusiness like and unscientific to add plant food rather than to use that which the soil already contains.

Computing the quantities of fertility in the soils investigated and at commercial prices for the three elements mentioned, we have a total value of \$1687.96 per acre, in the top six and two-thirds in. of soil. The potassium, calcium, iron, sulphur, etc., may be said to exist in unlimited quantities so far as crop production is concerned.

The element, phosphorus, is also contained in comparatively large quantities, but even should it be found advisable to supplant this amount by adding from commercial sources, this may be done by the use of raw ground rock phosphate which costs but 3 cents per pound or practically 1 cent for each bushel of wheat produced.

The element, nitrogen, is also contained in these soils in relatively large quantities and can be added to by the use of leguminous crops which, by the aid of their root bacteria, are able to collect free nitrogen from the air. Nitrogen is the most abundant element in nature. Yet it has the highest commercial value of all plant foods, selling on the market at about 15 cents per pound. Figuring the atmospheric nitrogen at this rate, it has been estimated that there is eleven million dollars worth of this element resting on each acre of land. Apparently, then, so long as red clover and alfalfa and other legumes are able to draw on this unlimited supply, nitrogen may also be considered as inexhaustible.

### Soil Fertility Not All Available At Once

It is certainly a wise provision of nature that the fertility of the soil is not all in an available form. If such were the case,



when the crops fail for lack of fertility, there would be nothing else to do but to add plant food in proportion to the crop desired. However, this is not the case as is indicated by conditions in the Red River Valley. The fact that production has materially decreased in this region and that the soil still contains an abundance of the essential elements of fertility indicate that there must be a change in the system of farming. The system in practice has simply drawn upon the supply of the plant food elements in the soil that were easily made available until they have been reduced to such an extent that production has decreased. The change of system must be such as will increase the availability or they must be added from commercial sources. The fact that the soil contains sufficient amount of the elements for a hundred large crops does not mean that it will produce even a bushel to the acre, because this fertility must be in an available form. The problem then, apparently, is to make available the fertility in the soil.

#### Farming Operations Must Assist Nature

The primary operation of farming is plowing. This is for the purpose of breaking up the soil particles so that the plant roots may easily penetrate the soil, so that moisture and air can enter it more readily and be retained in the soil, etc. Also the straw, stubble, and manure which may have been applied are turned under and incorporated with the soil so as to be utilized to the greatest advantage.

From the observation of many fields in various parts of the Northwest, it is probable that no other single operation is more responsible for the decrease in yields than the way in which plowing is done. It will be recalled that the amount of fertility in the soils of the Red River Valley were computed for practically 7 inches and it is doubtful if the average depth of plowing is over 5 inches. The surface six and two-thirds inches of soil weighs approximately two million pounds per acre or practically 300,000 lbs per inch of depth. On many of the fields observed, it was found that the plowing had been done at the same depth year after year until the soil beneath the furrow slice of about four and one-half inches was almost as hard as a traveled road.

There is no question but that plowing these soils an inch deeper than they have formerly been plowed would add wonderfully to their productiveness. This plowing deeper, of course, should be done as early in the fall or late summer as possible so as to give this new soil an opportunity to be watered and acted on by elements before a crop is planted on it. It has also been observed that plowing is often done at a time when the soil is not in condition to plow. One farmer gave an instance of where he plowed a field of heavy land when it was too wet, and he noticed that it took

several years to overcome the bad conditions that resulted. The subsequent treatment of the plowed land is also a matter that deserves careful consideration, especially when there has been any considerable amount of vegetable matter turned under.

The plowing under of manure is often accused of being responsible for a decrease in yield the year following. The reason for this usually is that the application was too heavy and the soil was not compacted after it was plowed, which admitted of the circulation of air to such an extent that the soil dried out. Also the rotting of an excessive amount of vegetable matter consumes a large amount of moisture and in case there is a deficiency this will, of course, be noticeable in its effects on the crop. The application of manure should be light, very even, and thoroly disked into the soil before plowing. The use of barnyard manure, plowing under straw, stubble, stalks, growths of clover, etc., not only adds to the soil value of the fertility which they contain, and furnishes material on which bacteria work and liberate the mineral elements of fertility, but this partially decayed vegetable matter in the soil also adds very greatly to the moisture holding capacity. This fact is particularly important in the regions of light soils and light rainfall. It is probable that the liberal additions of active organic matter to the low-producing soils of the Northwest will result in a greater increase in yields than any other one condition that can be brought about.

#### Rotation of Crops

It is apparent that no one is attempting to justify the ruinous one crop system which has prevailed in the Northwest. It is pointed out by such eminent authority as Professor Hopkins of Illinois that the ordinary systems of rotation deplete the soil fertility more rapidly than the one-crop system. However, if rational rotations are put into practice and everything possible is returned to the soil in the shape of manures, etc., it should not be necessary to buy any commercial fertilizers for the Red River Valley for many years. It is proven by numerous examples of farmers who are rotating crops in every section of the country, also by the agricultural college and their demonstration fields, that any sensible system of rotation of crops will greatly increase the yields. A rotation of crops destroys weeds, insect pests, plant diseases, distributes the farm work, makes live stock possible, accumulates fertility, etc. To put into operation a practical system of rotation does not necessarily mean that a farmer must go into stock raising. While it might be advisable for all to do so, it has been pointed out that it will require years for the natural increase of livestock in North Dakota to reach the required number for each farm. Counting all of

the horses, cattle, hogs, and sheep in North Dakota at the beginning of 1912, there was but one head to each 22 acres of land in the entire state.

There is no reason to suppose that small grain growing will not continue to be profitable when yields are practically doubled, which can be accomplished without the addition of commercial fertilizers or any large expense in any other direction. The corn crop, by using strictly acclimated varieties, can be made to more than pay expenses for the grain alone. A wheat crop following a well cultivated crop of corn on the older land is often increased 50 to 100%. Red clover can be sown and frequently a most profitable seed crop secured. In case a seed crop is not secured the benefit to the land will pay the entire expense of the crop, which will be manifested in the additional yields of small grain that follows. Assistant Secretary W. M. Hays, formerly of N. D. A. C. and also Minnesota A. C., says that the yield of small grains can be increased five bushels per acre by simply using better bred varieties. He also says that this can be done at the cost of not to exceed ten cents per acre. He means that only seed of known producing power and adaptability to the particular locality should be used as seed. It should be strictly pure, free from diseases, clean of all weed seeds, and of the very best quality.

The ordinary four-year rotation suggested for this section is as follows:

Corn, first year; oats, second year; wheat, third year; red clover, fourth year; and repeat. All manure available should be added to the clover land in the fall and winter to be plowed under in the spring for corn. A three-year rotation could be used as follows:

First year, corn; second, small grain; third year, red clover; and repeat. It is doubtful if any other one crop will do more toward securing profitable yields of wheat in the Northwest than the growing of corn in rotation, to subdue the weeds which are such a menace in many localities. Red Clover will supply organic matter and nitrogen to further aid the increase.

In the four-year rotation suggested, if all of the corn stalks and straw, and all the clover crop except the seed, are carefully plowed under and incorporating with the soil, it would only require the addition of 200 pounds of steamed bone-meal per acre as a fertilizer every three years to permanently maintain the soil fertility, which should be the ideal of agriculture. It would doubtless not be considered practicable to carry out just such a rotation as this, but an attempt should be made to approach it as nearly as possible.

It is the first business of every farmer to produce as large crops as possible from his soil. He must consider, however, that he is doing this at the expense of the fertility which his soil contains, and should so arrange his cropping system that the pro-



duction of crops will increase rather than diminish. That it is possible to do so is proven by the experience of farmers in England and other countries, where crops almost three times as large as our average, are grown on land that has been farmed for hundreds of years.

## A CORN CROP FOR NOTHING

W. C. Palmer, Agricultural Editor,  
N. D. A. C.

In a 15-year trial on the effect of corn on wheat yields at the North Dakota Experiment Station it was found that a crop of corn can be grown every fourth year and wheat the next three and still have more wheat than if wheat were grown the four

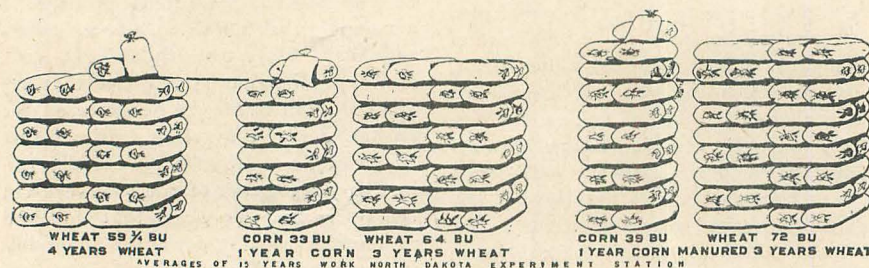
In comparing the merits of roots and corn silage for all classes of livestock I have picked out three heads to work under as follows:

(a) Comparison of the yield per acre of roots and silage when grown upon similar soil and under equally favorable conditions.

(b) The comparative cost of growing and harvesting the crops.

(c) The comparison of the relative feeding value of roots and silage for all classes of stock.

In all the experiments that I have considered I have found that roots yielded more green substance per acre than did corn but the corn was much superior in dry matter. The Maine station and the stations at Penn., Ohio, and Ontario



years. The four years of wheat gave 59½ bushels—the three crops of wheat following corn 64 bushels with 33 bushels of corn thrown in. When the corn was manured it yielded 39 bushels, while the next three crops of wheat gave 72 bushels. With corn 50 cents a bushels and wheat 80 cents a bushel the increase due to the six loads of manure comes to \$9.40 or \$1.57 a load. Applying this rotation to a section of land as compared to raising wheat continuously would increase the wheat yield 680 bushels with 5280 bushels of corn thrown in. If the corn were manured the increase in the wheat crop would be 2040 bushels with 6240 bushels of corn thrown in. By feeding the corn the manure would be produced. In addition one would get the profit that comes from feeding corn.

## ROOTS VERSUS SILAGE

Prepared by John Wentz, under direction of Prof. W. B. Richards

In studying the value of feeding stuffs, or in comparing feeds as to their value to the producer and feeder; it is necessary to take several points into consideration. For instance, a certain crop might be a great producer and at the same time not be of much value as a feed, or it might be valuable as a feed but a poor producer, or the production might cost enough to overbalance its value as a feed. We then see that the feed we want is the one that is of greatest feeding value in proportion to the cost of production.

all obtained about the same results from trials in yield of corn and several kinds of roots. The Maine station and the Ontario station tried rutabagas, mangels, and sugar beets as compared to corn.

Of the three kinds of roots, rutabagas proved to yield the highest in dry matter per acre, but in both cases they were inferior to corn. Averaging the results obtained by all four stations it is found that corn yields almost twice as much dry matter as roots. The Ohio bulletin for 1890 rather favors the production of roots for dairy cows but at the same they calculate that silage according to their analyses will yield 7100 pounds dry matter, 4,400 pounds of which is digestible while beets will yield but 3,750 pounds of dry matter all of which is digestible.

The strongest objection to the production of roots for the feeding of livestock is the cost of cultivation and harvesting. The cost of raising of roots varies a great deal in different localities. The Massachusetts station after an experiment comes to the conclusion that it costs from one and one-half to two times as much to raise beets as corn silage and that the corn is a much surer crop. At the Penn. station Waters and Hess estimated the cost of one acre of corn placed in the silo at \$16.17 while to grow and house an acre of beets cost \$57.54. Taking into consideration the yield of each crop we find that 4,615 pounds air-dry matter in roots cost \$57.54 while 6,763 pounds in corn cost \$16.17. At the Ohio station Thorne found that to grow and harvest an acre of beets yielding 15.75 tons and con-

taining 3,000 pounds of dry matter cost more than an acre of corn yielding 57 bushels of grain and containing 6,000 pounds or twice as much dry matter.

From the results of these experiments we see that there is quite a difference in the cost of the production in favor of silage. Most of this difference is in the cost of the labor required in the cultivation of roots.

Silage and roots undoubtedly have their most prominent place on the dairy farm. They are both succulent feeds and are relished by cattle. The question of which should be fed lies wholly upon the cost of production and the feeding value. There have been a great many experiments comparing these two feeds and altho silage is favored more often than roots we find instances where the experimenter rather favors roots.

At the Pennsylvania station two cows were selected and fed rations of 5 pounds wheat bran and 2 pounds cotton seed meal. From February 16 to March 8 each cow was given as much silage as she would eat (about 40 lbs.). From March 8 to 19, roots were fed in place of silage. The substitution was made upon the amount of dry matter present. That is, for every pound of silage free from all water a corresponding amount of roots was fed. Besides this ration the cows were fed hay thru the entire experiment. The live weight of the cows did not materially change, but there was a variation in the amount of food eaten daily when the two cows were on silage. More and richer milk was obtained from both animals while roots were fed, but at the same time a larger amount of digestible food was eaten.

It took .20 to .33 pounds more digestible matter to produce one pound of milk solids and from .068 to 1.94 pounds more to produce one pound of milk fat during the period when roots were fed than in the period when silage was fed.

At the Massachusetts station silage showed a great superiority over beets for dairy cows. While silage was fed the cows produced more milk and butter and gained flesh, while they lost flesh on beets. The Ohio station in two different experiments obtained opposite results to those of the Massachusetts station, in respect to the amount of milk given. In respect to the amount of flesh gained the Ohio station found the silage superior one year and roots the next.

As to the value of silage for steers the Ontario Agricultural College found that steers on the roots ration made slightly more gain than the ones on silage, but more of roots and other feeds that were fed in connection were eaten. They calculated the cost of 100 pounds of gain on the root ration to be \$8.09 while silage was \$7.80, when calculating both roots and silage at \$2.00 per ton.

Silage and roots are not fed much to



horses as they are too succulent for working horses. However, either feed is very valuable when fed in small amounts to keep up a good healthy condition in the animals.

For swine, silage has not proven as valuable as roots altho there are some swine raisers that feed a little silage in midwinter, and for sheep roots are more commonly fed but authorities say that silage will bring about the same results

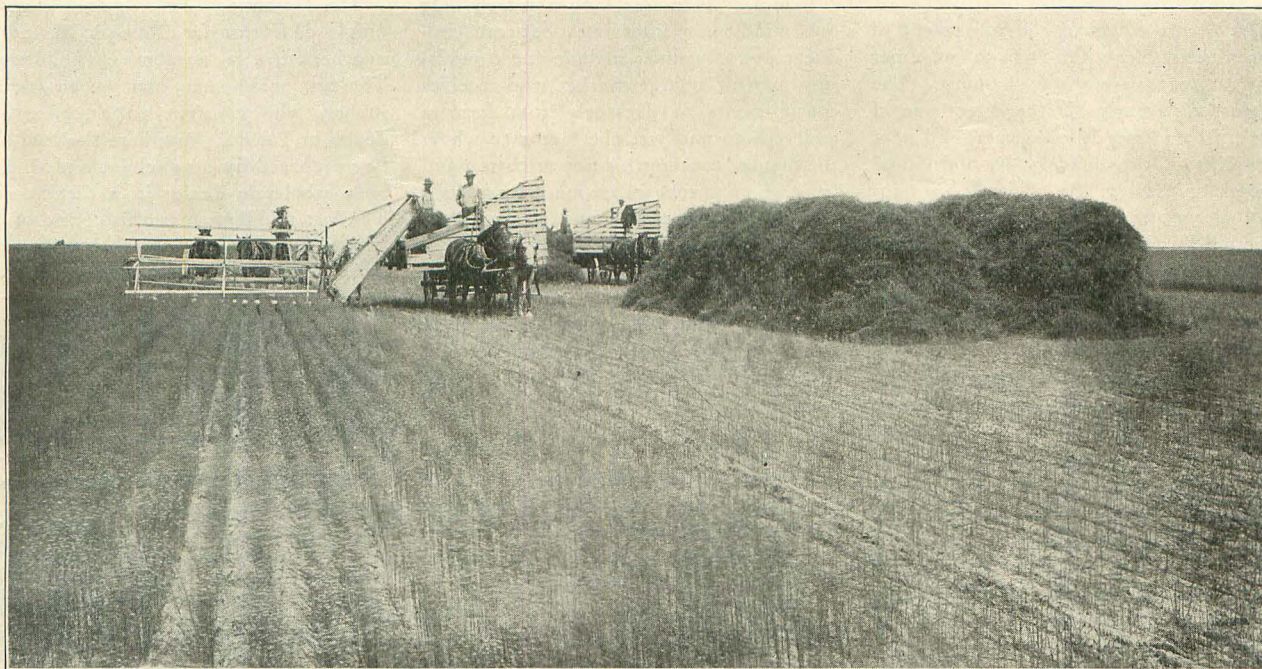
effect as roots. For dairy cows there is no doubt about its economy as compared to roots.

#### FLAX CROPPING ON NEW LANDS

H. L. Bolley and M. L. Wilson

An interesting bulletin by H. L. Bolley of the North Dakota Experiment Station and M. L. Wilson of the Montana Ex-

periment Station is really a picture of best methods in handling sod lands. As it is issued in a comparatively small edition it will, chiefly, be sent out only upon request. It does not deal to any extent with the preparation of old land but it shows how new land should be handled in order to avoid spoiling the land for flax cropping in the future. It explains very clearly what is meant by soil deterioration arising from soil infection by root destroying fungi.



The use of the header in cutting flax. In the drier regions, when the flax is thoroughly mature, it can be headed and placed in narrow tall stacks in the manner indicated and threshed at once. If it is late in the year, it is well to have it in these stacks anyhow, because if the snow should come early, it is easy to save the seed in such stacks early in the spring.

In fitting fancy stock for shows some stock men say there is nothing that will give the fine finished condition that roots will.

From what investigations have been made I think it is shown that silage is by far the most economical feed when the cost of production and feeding values are considered. The cost of cultivation is less and the yield of dry matter is greater. As a feed it has the same physiological

effect as roots. This joint bulletin is intended to illustrate the best methods of handling sod lands to prepare them for cropping to flax.

It is written primarily for those regions which may be spoken of as semi-dry land areas. The bulletin is prepared in a topical manner, each page treating a definite subject. Each subject is illustrated by a carefully prepared picture. The bulletin

illustrates all the processes from engine farming down to the two horse proposition.

#### SYSTEMS OF MARKETING FARM PRODUCTS

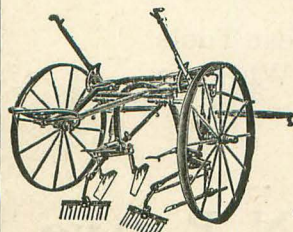
Systems of marketing farm products and the demand for them at trade centers are the subjects of a special report to Congress

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(Cultivator)

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Meudota, Ill.**



ONE RIGHT WAY



by the Secretary of Agriculture, recently published. The report was made by special direction of Congress in order that information might be at hand concerning the establishment of a division of markets in the Department of Agriculture. The Secretary specifies various items of service that could be performed by such an office, with recommendations that they be adopted, if it is created. The report covers 391 pages and is crowded with information with regard to the subjects treated.

#### From Producers to Consumers

The report treats of the movement of farm products from the farm to consumer thru a great variety of channels. The simplest distribution is the direct one of delivery by farmer to consumer, and next after this is the delivery by individual farmers or associations of farmers to individual consumers or associations of consumers. In these direct forms of distribution, the middleman is eliminated, altho, of course intermediate services are performed either by producers or by consumers or by both parties.

#### Intervention of Middlemen

Among the varieties of middlemen concerned in the marketing of farm products are the traveling hucksters who go from farm to farm gathering eggs, butter, poultry, calves, and other commodities, which they sell to shippers, jobbers, or retail dealers. The country merchant is often the first receiver of such products as eggs, farm-made butter, poultry, wool, hides, cotton, and sometimes grain and hay. In regions where grain is the staple product, the tendency has been to displace the country merchant by the grain buyer and the local elevator man.

Farmers commonly sell thru commission merchants and to some extent directly to wholesale dealers and also to retail dealers. The farmer who employs a trustworthy commission merchant who will handle his products honestly and honorably will get the current prices for them within the

range of the commission merchant's business, but the farmer often finds himself in the hands of a commission merchant who falsely reports that the products were received in damaged condition or that they were of a grade lower than they were in fact, or he reports receiving prices lower than those actually received by him for the products. Worse than this, it is by no means rare that the commission merchant has sold the products and failed to return the net proceeds.

Samples of transactions in which only one middleman intervenes between producer and consumer include the commission man at a large market who receives consignments of livestock from farmers and sells to packers; the factor to whom the planter consigns his rice or cotton and from whom purchases are made by millers; the warehousemen who manage the sale of a Virginia planter's tobacco.

The intervention of two men between producer and consumer is a common occurrence. Fruits and vegetables are often marketed thru the aid of two middlemen, the city commission dealer and a retail merchant.

#### More Than Two Intermediaries

A series of three middlemen may include first, the local buyer of the shipper; second, the commission dealer or the wholesale merchant; and third, the retail merchant. In the sale of fruit by auction, which is common in large cities east of the Mississippi River, the auctioneer is an additional middleman. He may sell for a commission dealer, to whom the consignment may have been made by a country buyer; and

the purchaser at such an auction may be a jobber, who in turn sells to a retail merchant. Five middlemen are thus concerned in such a transaction.

Onions raised in Kentucky are sometimes bought by a local merchant and shipped to Louisville; here they may be put into sacks and consigned to a New York wholesaler or a commission man who in turn sells to a New York retailer. Eggs and poultry frequently pass thru the hands of, at least, four middlemen.

The marketing of clover seed is an example of a transfer from one farmer to another thru a number of middlemen. The first middleman may be an Indiana jobber, who consigns to a commission dealer in Toledo, Ohio; here the seed may be purchased by a merchant and shipped to a wholesale dealer in a distant city. The last middleman in this course of distribution is a country storekeeper or a city dealer in agricultural supplies.

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### Market Places and Warehouses

Public market places are established in a number of cities and towns, and in these places consumers may buy such articles as fruit, vegetables, dairy products, poultry, and eggs direct from farmers as well as from dealers.

Another institution which aids the producer to dispose of his crop is the public warehouse. Illustrations of this are afforded in the marketing of tobacco in Virginia and North Carolina, wool from the northern Rocky Mountain States, and to some extent rice in Louisiana and Texas. The growers or their representatives, with their produce, meet the buyers at these warehouses.

### Diversion in Transit

While farm products are in transit by rail, there are certain points at which the consignor may designate a final destination. The purpose of this practice is to enable the consignor to find the best market for his goods. This is the plan followed in shipping fruits and vegetables by rail from California to the East and from Southern States to the North.

### Associative Marketing

The Secretary of Agriculture has much to say concerning associative marketing by farmers, and the economic advantages are stated in detail. "A survey of the systems of marketing farm products clearly discovers what the farmers can best do to their advantage. They must associate themselves together for the purpose of assembling their individual contributions of products, of shipping in carload lots, of obtaining market news at places to which it is practical to send their products, to sell in a considerable number of markets, if not in many markets, and to secure the various other economic gains of associative selling."

To carry out this suggestion, it is recommended that if Congress establishes a division of markets, a corps of traveling field agents be maintained to assist farmers to form associations for marketing their products.

### Estimates of Fruit and Vegetable Supply

It is also recommended that estimates of the prospective supply of fruits and vegetables, and perhaps other products not now represented in the quantitative estimates of the Department's crop reporting service, be made a short time before harvest, so that the farmer may "have in mind a fairly definite idea of the volume of the crop thruout the country in order that he may occupy a place in the market that is fair to himself or, as the case may be, a place in the market that is fair to the consumer."

General market news service is not recommended. If such service were derived from telegraphic reports, the expense would be enormous. One farmers' marketing association spends \$25,000 a year in telegraphing alone and a fruit-

growers' organization spends \$75,000 for this service.

### Field Agents and Correspondents

It is proposed that a corps of traveling field agents and a large corps of local agents and correspondents be established for the following items of service: To help producers organize for associative marketing; to examine and remove local difficulties in the way of such marketing; to help producers to find markets; to report the current descriptive condition of crops, in addition to the work already done by the Department's crop reporting service; to estimate the probable production of crops a short time before harvest; to report the beginning and ending of the shipping

season; to report the crop movement from producing points thru "gateways" to principal markets.

### Subjects for Investigation

Among the subjects whose investigation is suggested are the storage of farm products either on the farm or elsewhere

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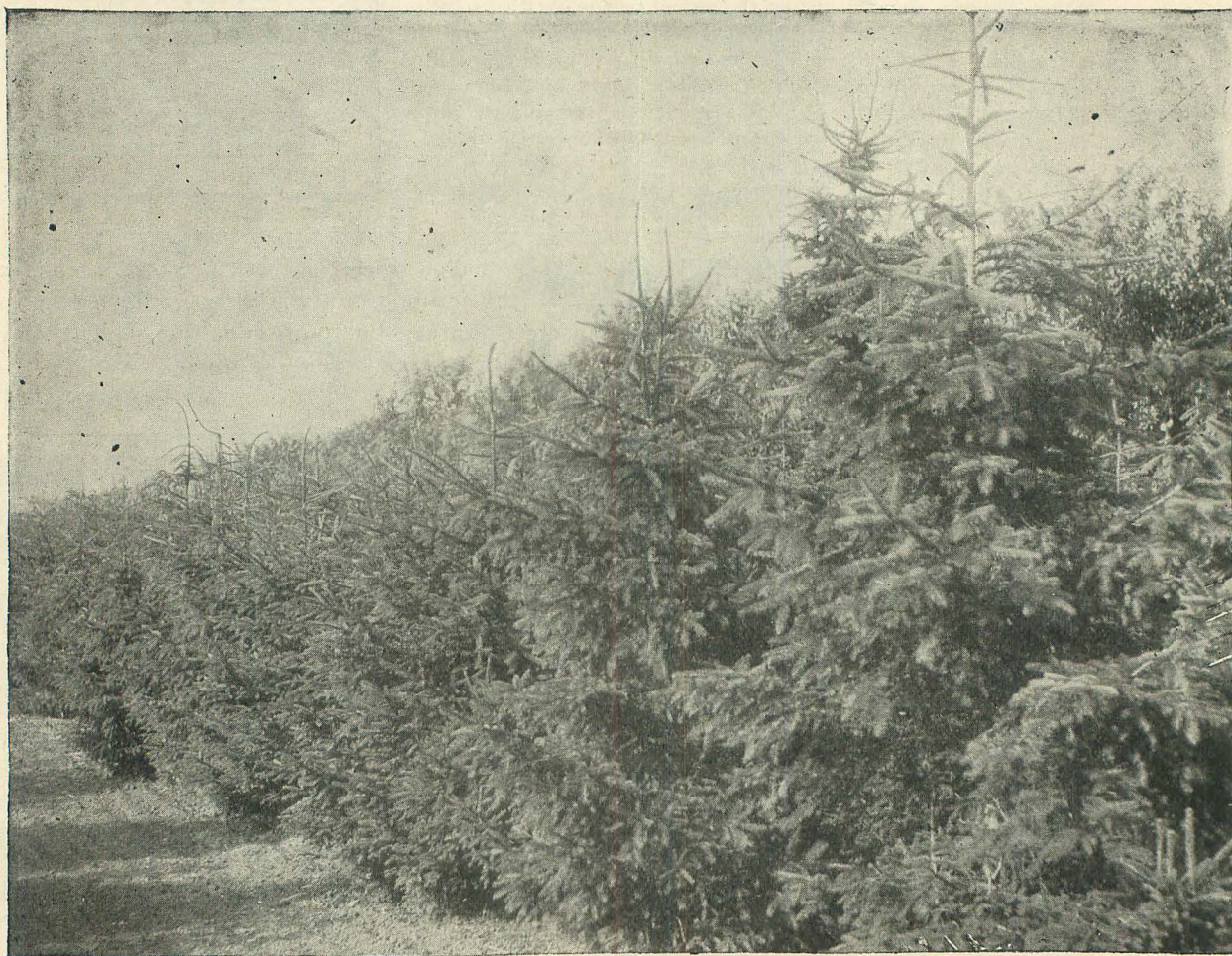
pending their sale; the business of commission dealers; the various costs of marketing, properly itemized, and compared with prices of products at the farm and with consumers' prices; a description of principal markets and of chief producing regions; and some problems of transportation.

marketing farm products in other countries, with special attention to those features which it may be assumed might be adopted beneficially in this country.

#### Proposals to Aid Consumers

The Secretary of Agriculture closes his recommendations by making one concerning the participation of consumers in the

tail and other local distribution. The consumer's aspect of the problems of the distribution of farm products is a conspicuous one at the present time, and problems in distribution that are concerning the consumer rather than the producer may well be included within the service of a division of markets."



**"No Better Wind-break about the Home than the Spruce can be Found"**

Some information with regard to foreign markets, it is advised, might be made useful to producers. It is proposed also to keep an elaborate record of prices of farm products in which prices at the farm shall be paralleled by wholesale and retail prices. Among the other recommendations are the maintenance of a list of marketing associations and the collection of statistics concerning the business done by them; the investigation of systems of

solution of marketing problems. "A cheapening of farmers' costs of marketing will naturally result in gain to the producer rather than to the consumer. If the consumer is to gain by changes in the costs of distribution, it seems probable that he must do so thru cheapening or eliminating costs at his end of the chain of distribution. The consumers can cheapen the costs of farm products by co-operative buying and by reducing the expenses of re-

#### HOW TO RAISE GOOD SEED POTATOES

During the ten years from 1901 to 1910, inclusive, the average acre yield of potatoes of both Germany and Great Britain was approximately 200 bushels—that of the United States not quite 93 bushels. Of the many causes which operate to produce a low average potato yield in this country, poor seed, according

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to officials of the Department of Agriculture, is an important one. The American potato grower pays too little attention to his seed potatoes. The European growers, especially those of Great Britain and Germany, pay very strict attention to the quality and quantity of seed they use.

The question of what constitutes good seed is a vital one, and possibly no two persons would fully agree in every particular upon this point. According to William Stuart of the Department of Agriculture, in Farmers' Bulletin 533 on "Good Seed Potatoes and How to Produce Them," just issued, the following factors play an important role: Pure seed from productive plants, not overripe, uniform in size and shape, firm and sound, with first sprouts just showing at planting time. Seed of such quality if furnished suitable cultural conditions will seldom fail to produce a remunerative crop. A conservative estimate of the increase that might be expected from the use of high-grade seed is certainly not less than 10 per cent. Such an increase based on the average of the past five years would amount to over thirty-four and one-fourth million bushels, having an approximate value of \$21,000,000.

Just as an instance of the value of good seed potatoes, may be cited the case of T. E. Martin, of West Rush, N. Y. Mr. Martin maintains a seed-selection plat from which all weak or imperfect plants are rigidly removed. At harvesting time the crop from the selection plat is sorted into two grades, "specials" and "selects." The specials must weigh not less than 12 ounces each, must have well-developed seed and stem ends, and, furthermore, must be true representatives of the variety grown, which is exclusively the Sir Walter Raleigh. The specials are used to plant the seed plat the ensuing season and the selects to plant the general field crop. The average production on an 18-acre basis for the past nine years has been 282 bushels per acre. The highest seasonal yield during this period was 417 bushels, and the lowest 233 bushels. These yields are being secured in a locality where the general average is approximately 150 bushels per acre.

By far the simplest and most promising means of developing high-grade seed potatoes is that of the tuber-unit and hill-selection methods. In the former a selection is made of well-formed and perfect potatoes from the seed bin before planting time. These are quartered as dropped, a little space being left between each set of four, so that the growers can readily observe any variation in vigor and uniformity between the various units as planted. By marking those which appear to be uniform in size, vigor, and type when the plants are still in vigorous growth the first step in selection has been accomplished. At digging time the product of each unit is separately harvested, and a

further selection made from the marked units for size, shape and smoothness. These selected tubers should be numbered with both field and unit numbers, and separately placed in small sacks of cotton or burlap. The final examination should consist of notes on the number and weight of merchantable tubers and their general size, shape and smoothness. From each of the units retained 10 of the best tubers should be selected for the next season's planting. The 10 selected tubers will give 40 plants for study the next year. The further conduct of the work will consist in the multiplication of the selected strains for field planting and the elimination of the weak plants.

In the hill selection method the most promising plants are marked during the growing season and at harvesting time only those which give greatest promise are saved. Five tubers from each hill selection should be saved and planted the following season according to the tuber unit system as outlined above. All that is needed for the work is a collection of 12-inch garden labels, a small pair of balances, a sufficient number of suitable small sacks, and a safe place in which to store the selected tubers until required for the next season's planting.

The new Farmers' Bulletin is a most instructive publication and may be had for

the asking—either from the Secretary of Agriculture or your Senator or Representative.

### THREE BILLIONS FOR GOOD ROADS

Guy E. Mitchell

Former Senator Bourne of Oregon has submitted a plan to the joint congressional committee of federal aid in the construction of post roads, calling for an expenditure of \$3,000,000,000 for good roads,

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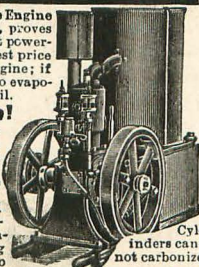
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212°

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\$1,000,000,000 being for construction and \$2,000,000,000 for maintenance. The billion-dollar construction fund, according to this plan, would be apportioned among the states upon the basis of area, population, assessed valuation and road mileage. The states would be required to deposit in the U. S. Treasury fifty-year 4 per cent bonds for the amount due them. The government would then loan the states the par value thereof for road construction, the government raising its fund by the sale of fifty-year non-taxable 3 per cent bonds. By crediting each state every year with the excess 1 per cent interest paid on the state bonds and allowing 3 per cent interest on the amount compounded annually a sinking fund would be established, it is estimated, from which the government would pay off the bonds at the end of fifty years and the state would be relieved of the principal on its bonds.

In discussing the merits of his plan, former Senator Bourne said the other day: "There are in the United States some 890,000,000 acres of farms, worth about \$39,000,000,000. There are some 22,000,000 working horses and mules on these farms, costing annually for feed and keep about \$1,760,000,000. With good roads will come substitution of traction for horse power, with a probable saving of a billion a year. If the expenditure for construction increased the value of the farms only 3 per cent the owners would get back immediately in property values more than the amount of the investment. If the amount expended annually for road maintenance reduced the cost of hauling 30 per cent, the saving would cover the cost of maintenance. In my opinion the adoption of my plan would double the total value of farms and reduce the cost of road hauling 75 per cent."

#### HOW THE FARMERS HELPED REVOLUTIONIZE THE MANUFACTURE OF IRON

B. G. Marshall

A carpenter of my acquaintance had taken the job of tearing down the old "Square Top Church" in a Massachusetts town. He had recently demolished a number of buildings and had been paid twice over—first, in the price charged for the work, and second, in the lumber

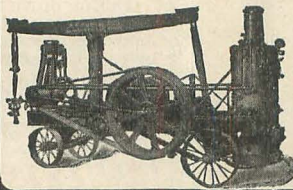
saved to be used elsewhere. When the trustees of this long-disused edifice decided to clear the lot of what was now becoming an eyesore and a fire risk, my friend, in order not to lose what seemed an opportunity, came forward with an offer which the deacons decided at once to be "very reasonable." It was reasonable, indeed; for, as the contractor ruefully told me after three weeks of back-breaking labor: "I hadn't any idea them old wrought-iron nails could hang on so. Why, the old Square Top was built in 1835, and I supposed I could jest knock it to pieces with no trouble at all. I tore down three buildings last summer, any one of 'em bigger'n this one, in less time than I've been at work on this already. And they warn't more'n fifteen or twenty years old. But the nails generally broke right off between the board and the timber; and these hang on like a double-rooted tooth."

Our grandfathers knew how to make iron that would last. But their methods in this industry, as in many others, were slow and laborious to an extent which a more hurried and nervous generation could not endure. Processes were involved for the making of iron and steel which produced a ton of rails with less human effort than was expended in the old days in the making of a crowbar. The earth was girdled with railroads and dotted with furnaces and mills; and we entered upon the "Age of Iron." The uses of iron and steel were

multiplied, and each year brought new proofs that these modern days were the golden period of the industrial arts. But the school of experience is one which never issues diplomas to graduates. The tremendous output of our steel mills was the wonder of the world, but wherever it was exposed to the elements it rusted at a ruinous rate. Iron work which had withstood serious damage the action of the wind and sea for half a century was replaced here and there with structures of modern design and material. In these cases it was very soon found necessary to employ protective coatings of some kind, for corrosion was progressing so alarmingly as to threaten an early and complete destruction. Out of this necessity arose the very useful invention of galvanizing, a process which, during the life of the coating, affords protection to the basic metal. But galvanizing is far from a complete remedy, as anyone may see by examining the spelter coating on any ordinary sample of galvanized steel or iron. It will generally be found full of fine cracks and holes, and in many cases will be peeling or flaking off, like the paint on a contract house which was built while the owner was on a trip to Europe.

The farmers were among the principal sufferers from the low quality of latter-day iron and steel. Barbed wire rusted out so rapidly as to raise the question whether this light and convenient form of fencing were really desirable. Meta-

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Hundreds of farmers **right now** are making from \$1000.00 to \$2000.00 a year extra money, besides keeping up their farm work, making wells with the

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FARGO, NORTH DAKOTA



roofing developed leaks within a very few years, and soon had to be wholly renewed. Irrigation pipe went to pieces after three or four seasons. Board fences, cattle and hog pens, and any wooden structure involved the use of steel-wire nails, and a very few years of exposure were enough to render these worthless.

Twentieth century science, however, has delved into this matter of iron rust, as well as into yellow fever, polluted drinking water and depleted soils. About ten or twelve years ago the attention of the U. S. Department of Agriculture was drawn to the subject by many complaints received from farmers of the rapid corrosion of fences, roofing, etc. A very careful investigation was made, involving several years of study and experiment by expert chemists and metallurgists. Many samples of the old and durable iron of the early nineteenth century and many others of the rapidly corroding steel of later times were submitted to the closest examination with regard to mechanical structure and to chemical analysis to determine the amount and character of foreign substances. In practically every instance the old iron which had withstood long periods of exposure was found to be of a high degree of purity, while most of the steel and iron of recent manufacture contained much larger quantities of carbon, manganese, copper and the other elements which constitute impurity. The verdict of the Department was summed up in the statement "Iron resists corrosion in proportion to its purity," and manufacturers were advised to secure the highest degree of purity in their product.

This advice, for the most part, went unheeded; but one large mill in Ohio determined to see what could be done in the way of a rust-resisting iron by the elimination of impurities. They immediately began a series of experiments with the end in view of producing a metal which should be as nearly one hundred per cent iron as was humanly possible. The impurities which it was their problem to reduce to the vanishing point amounted to but fractional portions of one per cent, for which it is a fact somewhat surprising to the layman that the very steel which had been denounced as impure contained iron in excess of ninety-nine per cent. In respect to corrosion, however, these minute quantities of manganese, sulphur, copper, etc., are like the merest traces of dissolved lead in drinking water. And evidence was not lacking that if the process could be carried to perfection, and the last vestige of foreign substance excluded, the result would be a metal absolutely rust-proof. In 1905 an ingot iron was placed on the market in which had been achieved an even higher degree of purity than that of a hundred years ago. The practical success of this metal when used for culverts, roofing and other exposed iron work soon brought forth competitors; and

today nobody thinks of offering an iron as rust-resisting without claiming for it a high degree of purity.

Municipal and highway engineers all over the country, as well as those connected with great irrigation and structural projects, are specifying iron of the highest degree of purity obtainable for use in the work under their charge. It seems certain that within a very few years we shall see the almost universal adoption of iron of this character.

### MILLIONS LOST THRU RAISING WHEAT

It costs \$1.04½ to produce the average bushel of wheat, according to Dr. J. H. Worst, president of the agricultural college of North Dakota. He says that the farmers are mining the soil and robbing future generations every time they grow a wheat crop and that they are in reality producing the crop at a real cash loss every year.

"According to the very best authorities," says Dr. Worst, "one acre pro-

ducing 20 bushels of wheat mines from the soil 44 pounds of potash, worth 5 cents a pound, or \$2.20; twenty pounds of phosphoric acid, worth four cents a pound or 80 cents, and 42 pounds of nitrogen, worth 15 cents a pound, or \$6.30; a total of \$9.30 an acre or 46½ cents worth of soil fertility for every bushel of wheat raised. The United States Department of agriculture says that labor and other production cost, interest on investment, cost of marketing, depreciation, etc., amounts to 58 cents per bushel for all wheat raised in the United States. This brings the actual cost of a bushel of wheat, including the commercial value of the constituents removed from the soil, up to \$1.04½."

Since the average price received for wheat is much less than this sum Dr. Worst estimates that the annual loss to the farmers of this country runs well into the hundreds of millions on their wheat crop. The loss in North Dakota thru the fertility alone which was removed by the wheat last year, says Dr. Worst, will amount to \$70,000,000. Dr. Worst is vice-president of the International Dry-Farming Con-

## "The Ground Was Fairly Covered With Dead Gophers"



That's what Mr. John Doull, of Springside, Alberta, writes after he used Kill-Em-Quick Gopher Poison on his land. Read his letter:

"I bought five dollars worth of Kill-Em-Quick (and it killed 'em quick) from Gilchrist, Lloydminster, Sask. The ground was fairly covered with dead gophers."

Hundreds more letters like this speak in most convincing language that Kill-Em-Quick Gopher Poison does the work it is intended to do, and does it cheaper and with greater ease than any other gopher poison.

## Mickelson's Kill-Em-Quick Gopher Poison

For less than 1c per acre you can kill the gophers on your farm. Mickelson's Kill-Em-Quick is the only gopher poison that can do it. There's 154 deadly doses of poison in every ounce of Kill-Em-Quick. A 75c box contains 13 ounces, or enough to poison over 2000 gophers. Figuring that each gopher eats, destroys or stores away about 10 cents worth of grain every summer, and every pair reproduce 20 to 36 young, you can save fully \$400 worth of grain by using Kill-Em-Quick.

I unconditionally guarantee that if Kill-Em-Quick does not kill gophers for less than 1c per acre, I'll have your money returned to you. I do not claim—I do not promise—I absolutely and unreservedly guarantee this.

My poison is the result of many years experience as a compounder of medical ingredients, and ten years study of gophers. From actual farm experience I have learned their habits, tastes and haunts. The sum total of my experience is Kill-Em-Quick. Gophers like Kill-Em-Quick. It tastes good to them. This poison is not only cheaper, more effective and easier to use than "home-made" poisons, but the gophers eat it greedily! They leave tender shoots to eat Kill-Em-Quick, and once they get a morsel of it in their mouth they are dead!

### Easy To Use

Kill-Em-Quick comes in sealed boxes—sizes 75c and \$1.25. Every box is exactly the same, with an individual guarantee that it will kill gophers for less than 1c per acre. To use, simply soak some grain in water over night and then drain off the water and mix Kill-Em-Quick with the grain. Time won't sour it, nor lose its strength. Mix with wheat, oats, oatmeal, shorts or cracked corn.

### Get a Box Now

Your druggist can sell you Kill-Em-Quick. If he has none, I'll send you what you need direct on receipt of price as quoted above. NOW is the time to get Kill-Em-Quick—don't wait another day. Every day you wait you are taking chances on losing grain to gophers. You can't buy a cheaper gopher poison than Kill-Em-Quick. You can't find a gopher poison more deadly in its effect. Get your supply now.

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### Free Coin Purse

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gress. His figures are so startling in their indication that the future of the American farmer must depend largely upon feeding crops and on the return of the manure to the soil that a discussion of the subject will be made a special order of business at the annual meeting of the Congress in Tulsa, Oklahoma, next October.—Dry Farming.

#### SOIL SURVEY OF BARNES COUNTY, NORTH DAKOTA

The Bureau of Soils, U. S. Department of Agriculture, has completed the field work of the Soil Survey of Barnes County, North Dakota, and the report, which is now in course of preparation, will be issued sometime during the coming sum-

mer. Barnes County contains 1,506 square miles, or 963,840 acres.

The report will show the future agricultural prospects of the County, what crops are best suited to each different type of soil found in the County, and will contain information and recommendations as to what methods of farm management and tillage should be practiced in order to secure a larger yield and better quality of crops and, at the same time, maintain or increase the present state of fertility.

The soil map of the County, which will accompany the report, will enable the farmers to tell on what type or types of soil their farms are located, showing as it does, in colors, the location and extent of each soil type and also the location of all farm houses, churches, schools, public roads, streams and railroads in the County.

The report and map will be a great aid to persons desiring to purchase land in any section of the County.

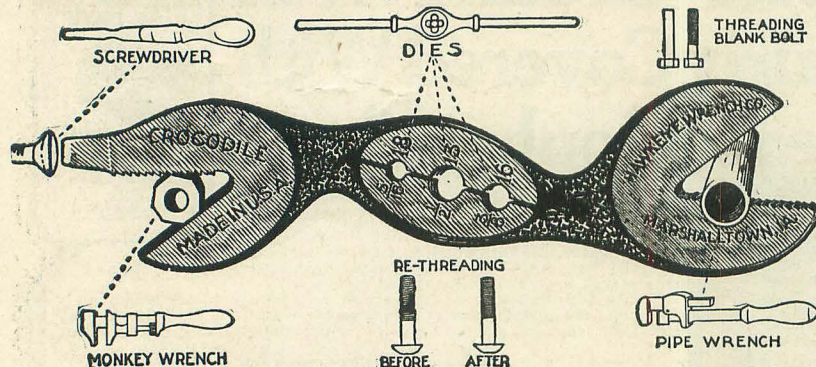
#### HORSE RAISING FOR ARMY UN- PROFITABLE

"If the United States government expects to make a big success of the remount stations that have been established in different parts of the country, and breed a type of cavalry horse, it will have to increase the price allowed for colts," said H. H. Downing of Front Royal, Virginia, and a prominent horse raiser of that state, who was in Washington recently.

"It is a move in the right direction that the War Department has started," he continued. "This is about the only country that is a world power that has never given any serious consideration to the breeding of a distinct type of horse for cavalry purposes, and in donating famous thoroughbred stallions to the government for use at remount stations our owners of racers have shown themselves to be public spirited citizens. But I fear that the process of building up the cavalry will be very slow unless the farmers who avail themselves of the services of thoroughbred sires are given better prices. The maximum price for 3-year-old horses has been fixed at \$150. A farmer cannot raise a horse and sell him to the government after keeping him three years and make any profit at \$150. I have been breeding Percheron horses on my farm, and have been asked why I do not breed some horses for cavalry purposes, and I have answered that I cannot make any money at the figure offered for horses. Even at the expense of being called unpatriotic I fear I shall have to keep on raising Percherons for which I can get a far better price when less than three years old."

## Something You Need EVERY DAY

At this season of the year. A **Combination Crocodile Wrench**—six handy tools in one. 8½ inches long.



You can get this Crocodile Wrench, *Farm, Stock & Home*, Minneapolis, Minn., the country's greatest semi-monthly farm paper, and the

**North Dakota Farmer**

**ORDER NOW**—This is a great offer.  
Use coupon below.

**North Dakota Farmer Lisbon, N. D.**

Enclosed find \$ .75 for which you are to send me **The North Dakota Farmer Farm, Stock & Home and Combination Crocodile Wrench.**

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**ALL  
FOR  
\$.75**

#### QUERIES AND ANSWERS

GIVE THE MAIN DIFFERENCE BETWEEN THE STUBBLE PLOW AND PRAIRIE BREAKER

Answered by R. M. Dolve, Prof. of Farm Mechanics

The breaker is used merely to cut and invert the furrow so that the sod will decay. The gentler the turn of the moldboard the easier will this be done—hence its shape. The stubble plow is designed, not only for cutting and turning the furrow but also for pulverizing it—hence the moldboard is made steep. The steeper the moldboard the greater will be the pulverizing action but the draft will also increase proportionately.



**WHAT SHOULD BE DONE IF MAGGOTS GET INTO A SORE?****Answered by Dr. Van Es, Dean Veterinary Department**

The maggots should be picked out and the wound subjected to antiseptic wound treatment.

**WHAT IS THE DIFFERENCE IN EASE OF HAULING WITH NARROW AND WIDE TIRE WAGONS?****Answered by R. M. Dolve, Prof. of Farm Mechanics**

King's Physics of Agriculture, Page 436: "On Macadam streets, wide tire 26 per cent less than narrow tire.

On gravel road, wide tire 24.1 per cent less than narrow tire.

On dirt roads, dry, smooth, free from dust, wide tire 26.8 per cent less than narrow tire.

On clay road, with mud deep, and drying on top and spongy beneath, wide tire 52 to 61 per cent less than narrow tire.

On meadow, pasture, stubble, corn ground and plowed ground from dry to wet, wide tire 17 to 120 per cent less than narrow tire."

**WHAT IS THE BEST METHOD FOR CHURNING SEPARATOR CREAM?****Answered by G. L. Martin, Prof. of Dairying**

Where there is only a small amount of cream each day keep each separation by itself till it cools to about 50 degrees F. before mixing it with the cold cream. If warm cream is mixed with cold cream, bad flavors are sure to develop. They will develop anyway if the cream is kept too long. It is best to churn every three days at least.

**WHAT CAUSES SPAVIN?****Answered by Dr. L. Van Es, Dean of Veterinary Department**

Spavin is caused by: (a) Hereditary predisposition; (b) strain incidental to violent movements; (c) by working colts at too young an age.

**WHAT IS THE DIFFERENCE BETWEEN THE STUBBLE AND SOD PLOW?****Answered again by R. M. Dolve, Prof. of Farm Mechanics**

The plow may be looked upon as a wedge of such shape that it will shear off the furrow slice, pulverize and invert it. The function of the sod plow is merely to cut the furrow slice loose and invert it so that the sod may decay and disintegrate. Besides cutting and inverting, the stubble plow has the additional function of pulverizing. It requires less power to force a slender wedge to penetrate a substance than a blunt one, and since a tough sod cannot be pulverized until after it has decayed, the sod plow is made with a long, gently curving moldboard which inverts the sod with the minimum amount of re-

sistence. The stubble plow, being designed to pulverize, is a blunter wedge whose steepness of moldboard depends upon the condition of the soil and the amount of pulverizing that can be done at the expense of a reasonable amount of power.

**WHAT CAUSES THE CORK TO FLY OUT OF A BOTTLE OF MILK SOMETIMES WHEN LEFT STANDING?****Answered by G. L. Martin, Prof. of Dairying**

Some of the most common bacteria produce gas. These usually get into the milk from manure and other stable dirt so are very objectionable. These multiply rapidly in the milk when left standing in a warm place. The gas requires room, hence causes the cork to fly out.

**DO YOU ADVISE A SILO FOR NORTH DAKOTA?****Answered by J. H. Shepperd, Dean of Agricultural Department**

Yes. If a man has stock to consume the

silage and has capital so that he can build a silo and can arrange to fill it without going into debt for it, it is a splendid investment. It saves the whole feeding value of the corn and gives you a material like green grass for winter in its effect and it is fed as easily as hay stored in a mow.

**WHICH IS BETTER FOR GENERAL FARM USE, AIR OR WATER-COOLING GASOLINE MACHINES?****Answered by E. S. Keene, Dean of Engineering Department**

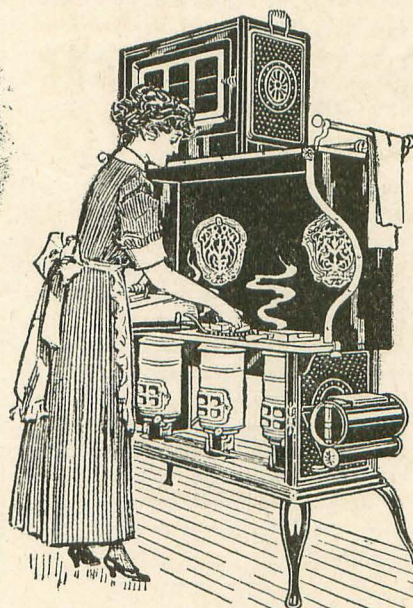
If general usage betokens excellence the water cooled engine is the better. It answers the purpose in most particulars but is liable to freeze. It can be regulated to keep the cylinder at a constant temperature but the water must be kept in circulation by a pump and cooling apparatus to give good results. In the case of air cooled cylinders where radiation alone is relied upon, the temperature is variable and if run for any length of time continuously the engine will overheat.

## The Cook-Stove

### is the most used implement on the farm, yet—

some farmers' wives are content—and some husbands are content to let them—put up with the out-of-date, back-breaking, nerve racking, work-making coal range, for washing and ironing and cooking.

All the old-time discomforts of the cook-stove—its dirt, its ashes, its filling and refilling, its feverish heat, its uncertain baking, its delays and its expense—are now spared housewives who know the efficient, economical



### New Perfection

#### WICK BLUE FLAME

### Oil Cook-stove

Uses oil. At two-thirds the cost of gas and one-half the cost of gasoline. Lights in a second. Intense blue flame. No odor.

Write now and let us send full descriptive booklet and give the name of your near-by dealer who handles the NEW PERFECTION and will gladly demonstrate.

**STANDARD OIL COMPANY**  
(AN INDIANA CORPORATION)

**COOK BOOK**

**STANDARD OIL COMPANY**  
Chicago

Please send me your 72-page Cook Book—I enclose 5c in stamps for mailing.

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R. F. D. ....

Post-office.....



# North Dakota Farmer

Entered as second class matter in the postoffice at  
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**Vol. 14 MAY, 1913 No. 11**

There are sixty agricultural experiment stations in the United States engaged in disseminating agricultural information.

We kill the owls and hawks because they occasionally rob the poultry yard and as a result, the mice and rats multiply and destroy a hundred times more than the poultry destroyed by these birds is worth.

Bad roads cost the American people more than \$200,000,000 annually in money, to say nothing of the annoyance and bad temper they create. And this loss will result, year after year, until we learn by co-operation to make good roads.

It cannot be denied that the average pioneer succeeded in making himself a home and that altogether the pioneers of the Northwest built up great commonwealths in spite of the money-sharks and grafters of every description. Many of the latter are now honored for their wealth.

Two county agricultural and domestic science training schools were established April 4, one at Maddock, Benson County, and the other at Park River, in Walsh County. These schools were organized under the provisions of Chapter 265, Session Laws of 1911.

Old-fashioned people of course used old-fashioned methods, and the feeding of 20 years ago was mostly to sustain life; in other words, hens, like other animals, had to be fed in order to exist. This idea is still held among many farmers. What they feed they suppose is all that is necessary both to maintain life and to produce eggs. The experienced breeder fully understands this.

Our senseless slaughter of birds permits the multiplication of worms and insects that, unless kept in check, destroy vegetation worth a thousand times more than is realized in the sport and cash enjoyed by killing the birds. Nature has provided a balance; man foolishly destroys this balance and the crops or our health suffer in consequence. If bird life were encouraged, the spraying machine would not be so necessary.

A genuine "booster" is the man who, by means of industry and economy, demonstrates that North Dakota is a good place in which to live, raise a family and make money. One such "booster" is worth a whole convention of land sharks who work only with their mouths in order to make their living off the other fellow. Brag and bluster don't count much in the substantial work of building up a country. Honest labor does.

Dr. Harvey W. Wiley says: "Pure food must be the foundation upon which the health of the nation is built, etc." It is gratifying to know that thru the persistent energy of our State Agricultural College, no commonwealth of the nation enjoys better pure food laws nor are they better enforced in any of them than in our own state. In pure food legislation and in the honest enforcement of the pure food laws, North Dakota has set the pace for all other states.

It is claimed that a quarter of a million deaths, annually, in the United States are to be laid at the door of the mosquito and house-fly alone. If savage animals killed one person where these insects kill one thousand, the whole country would be aroused and no expense would be spared until the savage brutes were destroyed. And yet many homes rather encourage the breeding of these pests by providing the most favorable conditions for their propagation. Flies, each, carry about with them from 500 to 6,000,000 germs.

The public drinking cup destroys more human lives in a single year than all the bears and wolves destroyed in half a century. We slay the large animal that occasionally kills or lacerates its victim, but actually, tho perhaps unconsciously, encourage the breeding of millions of bacilli that ravage the populace with typhoid, diphtheria, and scarlet fever. The house fly is more dangerous than all the savage beasts and venomous snakes on the continent. The difference is, the former is more visible than the latter; the former draws blood and lacerates the flesh while the latter leaves the corpse smooth and white.

More than a million farmers visited the good farming trains that were sent out last year by the agricultural colleges of

thirty-one states. This method of distributing agricultural information has become popular within the past few years, and tho rather expensive for those who equip and manage the trains, yet their effect upon farm management is so pronounced that no one will question the wisdom of running them.

A number of progressive farmers have signified their intention to plant shelter belts or windbreaks this spring as urged by President Worst of the Agricultural College. There is no doubt but that wind-breaks, after attaining a height of twenty or thirty feet and extending east and west across the state, and from one-half mile to one mile apart, north and south, would exert a very beneficial influence upon the climatic conditions of the state. Moreover, the cost per individual farmer would be very small, were all to co-operate in thus adding beauty to the landscape and improvement to the climate. Anything in the way of climatic improvement will add untold millions to the people of the state.

## BUSHEL OF WHEAT PROPOSITION

The Student Council of the Agricultural College has decided to offer every farmer in the state an opportunity to donate the price of one bushel of wheat, when he sells his grain next fall, the proceeds to be used for the construction and equipment of a boys' dormitory. The plan has already received substantial encouragement and the commendation of many good people. It is unique in that it is without precedent and implies no serious burden on any one. One bushel of wheat from each farmer will erect and equip a good-sized dormitory. The boys evidently believe that a farmer will give a bushel of wheat for a boys' dormitory; that is, a dormitory for the boys is simply balanced against one bushel of wheat for the farmer.

Any one conversant with conditions as they exist at Fargo where more than a thousand students are trudging the streets, oftentimes in severe weather, hunting for boarding places and glad to accept almost anything in the shape of shelter, will not wonder that the Student Council is taking steps looking toward the erection of a boys' dormitory. From the standpoint of health, morals, and common fairness, the students of the Agricultural College are justifiable in their endeavor to secure proper housing for themselves. They will be criticized, of course, but not by men of big vision.

Death has claimed more than a few on account of ill-ventilated and imperfectly heated quarters, while hundreds are submitted to uncongenial surroundings, to say nothing of temptations, hence this movement to see whether a farmer will give a bushel of wheat to build a boys' dormitory. The boys believe he will.



## Pure Food Advertisers

The products advertised below are in compliance with the pure food law of North Dakota and of the highest grade.  
ASK YOUR GROCER FOR THEM.

"BUY"

"EAT"

### HOME BRAND

Pure Food Products

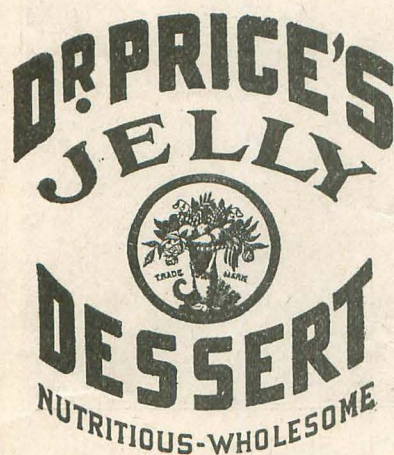
"ECONOMY" "SATISFACTION"

Griggs, Cooper & Co.

MANUFACTURING  
WHOLESALE  
GROCERS,

ST. PAUL, MINN.

Main Offices:  
CORNER THIRD AND BROADWAY



One package, 10 cents, makes one pint of wholesome Fruit Jelly. All flavors from true fruits.

## The Purest of Pure Food Products

are packed under the Brands of

*Nokomis*  
PURE FOODS

*Hawatha*  
PURE FOODS

*Blue Bird*  
PURE FOODS

*Wampum*  
PURE FOODS

Stone-Ordean-Wells Company  
DULUTH, MINN.

BRANCH HOUSES-Minot, Bismarck, N. D. Billings, Boreman,  
Butte, Great Falls, Mont.

MONARCH BRAND



FOOD PRODUCTS

A GUARANTY OF PURITY. A WELCOME GUEST at every table where the HOUSEWIFE demands the BEST. THE MONARCH LABEL insures QUALITY in Coffee, Catsup, Pickles, Maple Syrup, Canned Goods or any article bearing the MONARCH BRAND of REID MURDOCH & CO CHICAGO

## ANOTHER PURE FOOD PRODUCT

CEREKOTA

Self-Rising

Pancake Flour

Is a Scientific Preparation of Healthful Appetizing Ingredients and the Best Flour Milled in North Dakota

GUARANTEED Pure and Wholesome

Ask Your Grocer for a Trial Package

Bemmels Milling Company

Sole Manufacturers

Lisbon,

North Dakota



## Among Our Advertisers

### HORSE AND CATTLE SALES

During the coming summer there will be a series of sales at Miles City, Mont., by the A. B. Clarke Horse Sales Company. Miles City is in the very heart of the horse-raising section of the country and this company is one of the largest if not the largest dealers in range horses. If interested, it will be well to note the dates of the sales, beginning May 26th and ending October 16, as advertised elsewhere in these columns.

### LICE AND MITES

And how to get rid of them is a problem many poultrymen cannot solve. It is very easy if you use Licecil Compound. Simply hang the bottle in the coop, the vapors leaving the bottle are three times heavier than air and descend in a misty form, penetrating feathers, cracks and crevices. Lice have no lungs and breathe thru the pores of their body and positively cannot live in this vapor. It is not necessary to paint, spray or dust. Licecil is so easy and convenient to use. Write METZGER CO., No. 112, Quincy, Ill., for free circular telling of this marvelous preparation.

### POLARINE

The result of the study and work of most expert chemists and scientists is the friction-reducing motor oil now known to all motorists as Polarine. This oil is said to maintain the correct lubricating body at any motor speed or heat. It is used thruout America and in many foreign countries for all types of cars, winter and summer. Its production and distribution now commands the services of several thousands of men. The story of the oil and its making is told in an interesting book, "Oiling a Motor," which is sent free upon request to the Standard Oil Company, Chicago.

### A NEW ENGINE THAT BURNS ANY OIL

Perhaps the greatest step forward in bringing the oil engine to a state where it can be used at small expense and with little trouble on the farm has recently been made by the Stover Engine Works of Freeport, Ill. This concern has perfected an engine that will burn any oil. It starts on crude oil without the aid of any electrical appliances whatever. The Stover people are now making a line of these engines, and

expect to place them on the market at once.

The new engine is designed and built as an oil engine—not as a converted gasoline engine. Its construction differs radically from that of the gasoline engine. It has no dry cells, spark coil or electrical ignition. The elimination of these features, it is claimed by the makers, does away with ninety per cent of the troubles of the gasoline as used on the farm.

The system of ignition is characteristic of the simplicity of the new oil engine. The cylinder head is not water-jacketed, as is the case with the gasoline engine. Into this cylinder is fastened a bulb, made in the shape of a ball outside the head, with a rod casting, shaped like a pipe, that projects inside. A torch fastened under

this ball is used to heat the ball for starting. When the engine is started the torch is extinguished. The heat of the engine then keeps the extension hot as long as the engine is in operation, and this automatically supplies perfect ignition.

This crude-oil engine, the makers declare, is built to stand the hardest sort of farm work, and performs at a lower operating cost than that of any other engine ever built. It is less expensive in initial cost, too, than the gasoline engine. It is claimed, also, that the engine is simpler in design and construction than any engine now in use. It has only one mechanical operating part, no valves to get out of order or to be reground, can't get out of time and all parts are interchangeable.

## Livestock Department

### FARM AND STOCK NOTES N. J. Shepperd

Crop rotation distributes the work.

Exposure ages any machinery faster than use.

The ewe that receives good care shows it in her produce.

Too much linseed meal will cause the butter to look greasy.

Knowledge has never been so cheap or



A Bunch of Range Cattle in the Stockyard at Ravalli.

A serious setback in growth is never easy to get as now. fully recovered.

The animal will digest better what it relishes.

The best farmer accomplishes the most with the least labor.

For immediate results, cows four or five years old are the best.

The manure that goes directly to the land is always the most valuable.



A check in the growth of the young stock is a loss that cannot be regained.

In feeding all young animals thrifty growth is more important than to fatten them.

The farmer's income does not always increase when his farm increases in size.

It is not the hardest labor but the best directed that accomplishes the best results.

A rapid walk is largely a matter of training and if ever acquired it must be learned during colthood.

Continuous growth steady in character from the start will give the best distribution of fat in the system.

Farms in the highest condition as to fertility are invariably found in communities where livestock are abundant.

Looking between the hind legs, the lower a horse's hind quarters come down together before they split apart, the better.

The more the ration of an animal is varied the more perfectly it is apt to be digested and assimilated.

The man who raises sheep for market has two things—wool and mutton to consider; neither one can be overlooked.

A combination of two grains will produce a faster gain than the exclusive feeding of either one, even if they are equally efficient.

Every little detail tells in the result desired and success in poultry raising depends almost entirely on attention to the smaller details.

The business farmer prefers that type of animal which will bring him the most money for the least expenditure of time and expense.

When horses are getting nothing but dry feed, an occasional bran mash is highly relished. Once a week is not too often.

The more special dairy blood a cow has the more certain is she to turn her food into milk solids and not into fat and flesh.

A persistent milker is made very largely by her treatment the first season. If carelessly handled and allowed to go dry prematurely she will form a habit that will hardly ever be broken.

**WANTED** for cash, Young Foxes. **Envilla Stock Farm, Cogswell, North Dakota.**

**GRAIN AND COTTON MARKETS.** Future Prices of Grain and Cotton are now being approximately estimated on the basis of future cropweather conditions. This is a new process for estimating future values. For information regarding this service address, **Foster's Weather Bureau, Washington D. C.**

As a branch of general farming, dairying excels all others in bringing in a continuous cash revenue. It helps greatly toward maintaining the fertility of the land. Its products, if good, seldom have to seek a buyer and are less subject to the sudden market changes than most any other crop.

#### OUR MEAT SUPPLY IS DECREASING

Livestock raising by our farmers has been receiving merited attention from the bankers of the northwest, stimulated by one of our own progressive men by the fraternity. Being a valuable farming asset, it naturally increases the credit power of the farmer. That the statistics should show the number of animals in the farms decreasing is to be adopted as a matter of food supply, as a factor in diversified farming, and in the conservation of the soil.

In the report issued by the department of agriculture last January the statistics showed that there were 202,000 less milch cows, 1,230,000 less other cattle, 880,000 less sheep and 4,232,000 less swine than were reported the previous year.

If shrinkage in the livestock supplies signified that farmers had deliberately gone out of stock raising it would be serious, but it does not necessarily mean that. We should say that abnormal as the decline is, it is predicted on abnormal conditions. Until this year feed prices were excessively high. In the northwest the stock shortage can be attributed in great part to the failure of the feeding crops in 1910 and 1911, which in innumerable instances force farmers to reduce their holdings.

In the great corn belt, the exceedingly high prices which feed brought, reversed the usual process of getting rid of the corn; instead of putting it into beef and pork it was more profitable to ship to the terminal markets.

With the record corn crop of 1912 the swing back into a more normal condition will, undoubtedly, tend to increase the livestock holdings of the farmer and this will be stimulated the more if the present season gives a liberal yield following the three billion crop of last year. The time is therefore, propitious to agitate increased stock raising.

But in considering the question of meat supplies, one of the leading packing companies of Chicago points out a tremendous loss to the consumer brought about by the demand for veal. Their figures show that had the 8,000,000 calves, which were killed in 1911, been allowed to live one year, they would have given the consumer 4,800,000,000 pounds of meat instead of the 560,000,000 pounds. Here is a loss in meat supply that must have a potential effect on values.

America is extravagant and wants what it wants without much regard to cost. We shall, probably, go on consum-

ing baby beef without considering this invisible loss. It is important, however, as pointing out how it would be possible by legislation to increase the beef supply if such was ever thought to be necessary.—**Minneapolis Tribune.**

## Use Spare Time

One representative in each county to solicit subscription. Write for the best offer we have ever made.

North D. Farmer, Lisbon, N. D.

## GREAT HORSE & CATTLE SALE

Miles City, Mont.

May 26th, 27th, 28th 29th,

\* The A. B. CLARKE HORSE SALES CO., the oldest of its kind in the world, announce their first big Horse and Cattle Sale, at their yards at Miles City, Mont., on the above named dates.

At that time we will offer for sale about 2,000 head of horses. There will be 500 head of "broke stuff," many mares in the bunch. These horses are well broken to the harness, will be in good condition and ready to go right to work.

One thousand head of Montana Range horses, all young, big bone and in fine condition to ship. Besides the horses, we will have 1,000 head of choice Southern cattle, all ages, plenty of "she stuff" in the bunch, and 75 per cent white faced. We bought these cattle right; so can you.

A carload or two of blooded stallions, mostly shires.

Remember, anything your trade may demand you can get at our sales. We sell rain or shine, never postpone a sale; always have more than we advertise, and give the square deal to everybody. Come to our first sale and let us show you how we do it. Write or wire for further information to

S. B. CHAPPEL, Manager  
Box 776, Miles City, Montana



**Clip All the Wool**  
and get longer, better wool that will bring the highest price.

You can easily net from 15c to 20c more on every sheep you shear with a Stewart No. 9 Machine. Don't labor with hand shears, in the old, hard, sweaty way. Don't have aching, swollen wrists. Don't scar and disfigure your sheep with uneven shearing and spoil the wool with second cuts. Take off the fleece smoothly and quickly in one unbroken blanket with a

**Stewart No. 9 Ball Bearing Shearing Machine**

It's the most perfect hand operated shearing machine ever devised. Has ball bearings in every part where friction or wear occurs. Has a ball bearing shearing head of the latest improved Stewart pattern. Complete, including four combs and four cutters of the celebrated Stewart quality. Get one from your dealer, or send \$2.00 and we will ship C. O. D. for balance. Satisfaction guaranteed. Catalog of Sheep Shearing and Horse Clipping Machines FREE.

**CHICAGO FLEXIBLE SHAFT CO.**  
175 OHIO STREET  
CHICAGO, ILLINOIS

**PRICE \$11.50**



# Oxford Down RAMS

A Few Choice Ones  
FOR SALE

## Willobank Farm

EASTGATE BROS.

LARIMORE, N. D.

## CLASSIFIED ADS.

One Cent a Word

Small advertisements will be classified under appropriate headings at the low price of one cent a word for each insertion. Cash must accompany all orders. Each initial or number must count as one word. TRY IT HERE

### LIVE STOCK

FOR SALE  
GALLOWAY CATTLE

J. W. & F. T. PETERSON, Litchfield, Minn.

POLAND CHINA PIGS, also Shropshire sheep. Seed grain. GEO. N. SMITH, Amelia, N. D.

FAMOUS O. S. C. SWINE. Am now booking orders for fine pigs of April farrow. Price: \$18 each; \$35 a pair. All Stock recorded free. Shipping point: Mankato. ROBT. A. HAEDT, Eagle Lake, Minn.

ASH GROVE FARM- Knudtson & Son, Props. Breeders of Pure Bred Percheron Horses and Short Horn Cattle, Both Sexes. Route 1 Fullerton, N. D.

J. S. BIXBY

RED POLL CATTLE. If you want dual-purpose cattle, I have the best. Rhode Island Reds, also in stock. LISBON NORTH DAKOTA

FOR SALE. Work Horses, Drivers, Stallions and Double-standard Polled Durham Bulls. LEAL STOCK FARM Leal, N. D.

FOR SALE

Percheron, Belgian and Shire horses

J. W. & F. T. PETERSON, Litchfield, Minn.



Purebred Registered  
HOLSTEIN CATTLE

The Greatest Dairy Breed  
Send for FREE Illustrated Book  
Holstein-Friesian Asso., Box 135 Brattleboro, Vt

## ENVILA STOCK FARM

Envilla Stock Farm, Cogswell, N. D. will quote you special prices on Angus Cattle, Shetland Ponies, Duroc Jersey Hogs, Wolf Hounds, Collies, Rat Dogs and other breeds, Angora Cats. All varieties of chickens: turkeys, geese, ducks, guineas, pheasants, rabbits, ferrets. Pets. Eggs for hatching. Parcel Post or Express. Guaranteed safe arrival. Fertile from Pure Bred stock. Packed in light baskets.

### MISCELLANEOUS

DETECTIVES WANTED. Young men to operate in own locality, secret service work, experience unnecessary, inclose stamp for particulars. Universal Detective Agency, 504 Colcord Bld'g. Oklahoma City, Okla.

AGENTS WANTED. Farmer's Directory, Account Book. Exclusive home territory. Easy seller. Big inducements. Particulars Free. Write Naylor 938 Ft. Wayne, Ind.

WOLF ALFA SEED. This seed has stood the test of many winters in this climate. There is none better. Write for price and sample. J. L. MAXSON

Buffalo Gap

South Dakota

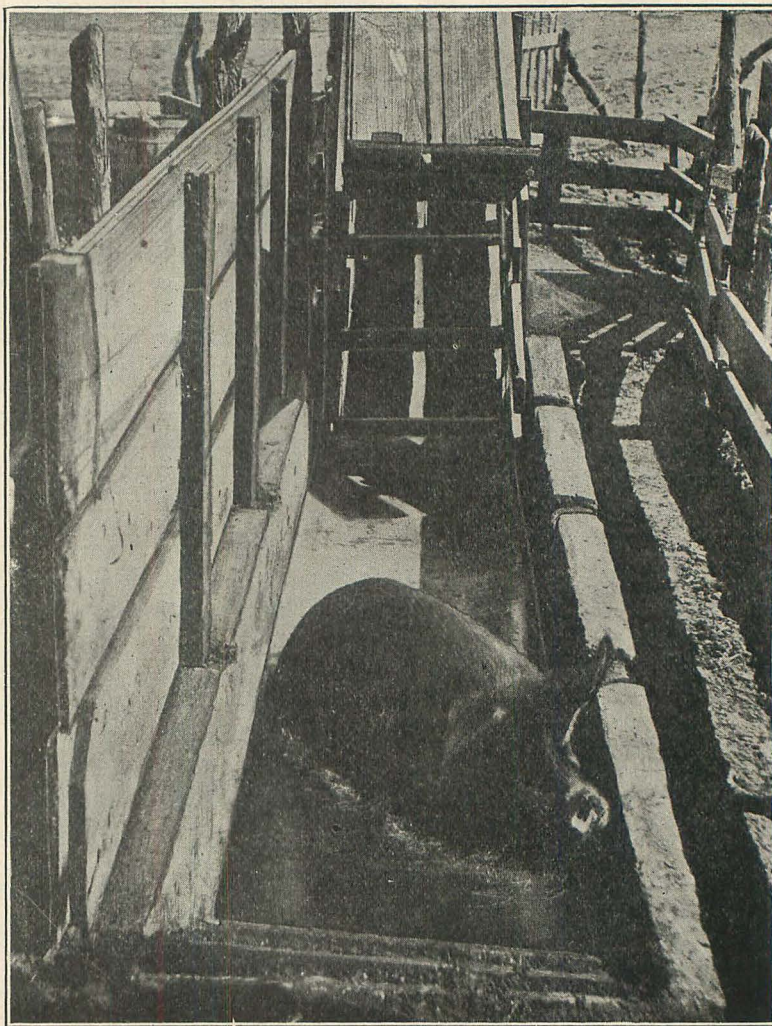
FOR SALE. Creamery in first class condition at a bargain at Crystal, N. D. For further information write to J. S. GESTSON, Sec. CRYSTAL, N. D.

### LIVESTOCK DIPPING VATS Their Construction and Uses

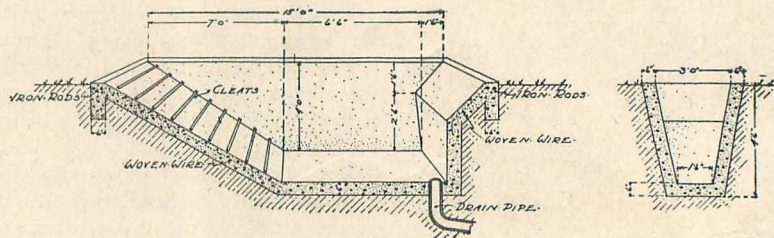
The passing of the range, the breaking up of the western ranch into farms and orchards, has caused a decided change in the nation's method of producing meat.

dipping in chemical solutions. Dipping also keeps the skin of the animal in a healthy condition and thereby aids its growth. Because of cheapness in first cost and lasting qualities, most dipping vats are now built of concrete.

The best place to locate a dipping vat



Showing the tank complete



Showing its construction

The resulting increased prices have made stock-raising profitable everywhere. This fact is particularly true of hogs. To grow bone and to put on flesh, swine must be healthy and must have sanitary surroundings. Nothing retards the growth of a hog so much as lice. Years of experience have shown that the best remedy for destroying lice and fleas is

is close to a fence, near the water supply, and convenient for a chute leading from a small, well fenced lot or corral. At the narrow end of the chute, and in

Young man, would you accept and wear a fine tailor-made suit just for showing it to your friends? Or a Slip-on Raincoat Free? Could you use \$5 a day for a little spare time? Perhaps we can offer you a steady job? Write at once and get beautiful samples, styles and this wonderful offer. Banner Tailoring Company, Dept. 196, Chicago



line with it, lay out the dipping tank (in accordance with the dimensions on the plan below) with the entering slide next to the chute. Make the excavation the same depth as the inside of the finished vat and of the same shape but 12 inches wider. Dig the deep part of the hole first and then slope the earth for the "entrance-slide" and the "climb-out." Lay the outlet drain pipe with its end even with the surface of the finished concrete bottom.

The side walls only will require forms. If the banks stand firm, inside forms alone will be needed. Make these of old 1-inch lumber on 2x4-inch up-rights. The full inside length of the tank is 15 feet, but the deep part is only 6 feet 6 inches long. The clear widths at the top and bottom are respectively 3 feet and 1 foot 6 inches. Since the concrete floor, as well as the side walls, is 6 inches thick, set the side wall forms in place upon 6-inch concrete blocks, so that the floor may be built under them. Space the forms properly and crossbrace them firmly upon each other.

Mix the concrete 1 part Portland cement to 2 parts sand to 4 parts crushed rock or 1 part cement to 4 parts pit gravel. Lay the floor and inclines directly on the solid earth. The concrete for the sloping ends should be made only medium wet, so that it will tamp well and stay in position without the use of forms. In the concrete for the inclines, 2 inches from the top, place strips of woven wire fencing to prevent possible cracks from heaving by the frost. As an aid to the animals in climbing out, imbed in the concrete of the "climb-out" the turned-up ends of iron cleats bent at right angles similar to a capital "U." Old wagon tires, straightened and cut in lengths not greater than 20 inches and turned up 4 inches at each end, will do. Leave one-inch clearance between the flat surface of the cleats and the concrete and space the cleats 8 inches apart. Fill the 6-inch space between the earth and side forms with concrete, mushy wet. In placing this concrete, be sure that it strikes the wooden form instead of the earthen side, as dirt in the concrete may make a weak, leaky wall. Carry the walls 6 inches above the surrounding ground

(to prevent surface water from running into the vat) and in each corner, 2 inches below the surface, lay two old iron rods. The entrance slope should be smooth to slide the animals into the vat without skinning them up; therefore finish its surface with a wooden float and a steel trowel.

At the leaving end of the vat there are often built two "dripping pens" with their division fence on a line with the center line of the vat, so that the gate at the dipping vat, hung to this fence, may close either pen, when it is full, and allow the animals from the vat to pass into the empty pen. The floor of these pens is built the same as a sidewalk or feeding floor, except that the surface is grooved and sloped so that the dip running off the animals will drain back into the vat.

For a dipping vat of the dimensions shown, there will be required 3 cubic yards of crushed rock,  $1\frac{1}{2}$  cubic yards of sand and 5 barrels of Portland cement. These materials will usually cost about \$10.

This same tank may be used for dipping sheep in order to cure mange, scab and other diseases caused by parasites. On account of the resistance of the wool, it is advisable to keep sheep in the tank at least one minute. Very lousy hogs should remain equally long. This result may be secured by the use of a drop door, called a "soaking gate," operated from above by a rope and pulley. If a longer tank is wanted, for each 3-foot increase of length in the body of the tank there will be required  $\frac{1}{2}$  cubic yard of crushed rock,  $\frac{1}{4}$  cubic yard of sand and 4 bags of cement.

When not in use a concrete dipping vat needs no care other than providing it with a good cover or so enclosing it as to prevent accidents. It will not rot or rust out and will require no repairs. Such an improvement is a paying investment for every farmer.

#### GREEN PASTURAGE FOR HOGS

There are dollars for Iowa farmers in

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Terms Reasonable LISBON, N. D. Write for dates

### ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN. Comparison of Receipts and Shipments of Livestock for April, 1913

	Receipts					
	Railroads	Cattle	Calves	Hogs	Sheep	Horses
C. R. I. & P.....	561	162	1108	83	.....	44
C. G. W.....	1359	836	4399	1572	89	149
C. M. & St. P.....	4214	1096	13920	1935	27	398
M. & St. L.....	1748	413	9510	124	.....	218
C. B. & Q.....	189	132	930	5	.....	21
M. St. P. & S. S. M.	4518	2978	11648	77	2	342
Gt. Nor.....	7303	3908	23283	6820	42	678
Norl Pac.....	4885	1243	7383	3152	60	305
St. P. B. & T.....	.....	.....	.....	.....	.....	.....
Driven In.....	995	87	999	397	17	.....
Total.....	29133	12029	90177	14450	267	2552
Increase over 1912	1720	.....	11030	2325	.....	308
Decrease.....	.....	.....	7374	.....	802	.....
Average Wts.....	808	219	232	97	.....	.....
	Shipments					
	Railroads	Cattle	Calves	Hogs	Sheep	Horses
C. R. I. & P.....	1795	133	.....	129	.....	55
C. G. W.....	2100	212	.....	.....	21	76
C. M. & St. P.....	6297	297	11853	1702	42	336
M. & St. L.....	512	.....	.....	214	5	18
C., St. P., M. & O..	5251	2542	155	368	9	180
C. B. & Q.....	1215	26	9323	8258	.....	163
M. St. P. & S. S. M.	663	26	.....	1958	58	39
Gt. Nor.....	1773	132	.....	.....	77	62
Nor. Pac.....	1503	186	.....	605	29	54
St. P. B. & T.....	.....	.....	.....	.....	.....	.....
Driven Out.....	602	208	32	2	22	.....
Total.....	21711	3762	21363	13236	263	983
Increase.....	3082	2324	3447	6636	.....	184
Decrease.....	.....	.....	.....	.....	316	.....
Jan. 1 to date....	74712	9849	95350	87170	1333	3769
Increase over 1912	22097	4808	.....	16185	.....	778
Decrease.....	.....	.....	3512	.....	1169	.....

## SHROPSHIRE RAMS

I have forty-five thoroughbred Shropshire rams for sale. Coming two and three years old. Prices right. Call and see what I have to offer or write.

FORRESTER H. SMITH

Amenia - - North Dakota



the forage crop bulletin, No. 136, just issued for free distribution by the agricultural experiment station of Iowa State College. It points the way for a use of green pasturage in pork production that will help the farmer to sell his corn crop for prices ranging as high as \$1.03 a bushel when hogs are quoted at only \$6.00 a hundred. Three years of investigations, conducted by John M. Evvard, W. J. Kennedy, H. H. Kildee and E. T. Robbins, are included in the bulletin and it is one of the most complete reports put out by the animal husbandry section of the station.

The test leaves no doubt of the value of green pastures in fitting pigs for market. Compared with pigs fed in dry lot, forage fed pigs increased profits more than five-fold in many cases. Alfalfa grazed pigs in 1911 gave a profit of more than \$3.00 cash as compared with 61 cents for dry lot pigs. Different forages when grazed by pigs gave a profit ranging from \$40.00 to \$80.00 an acre, charging the corn used in the ration at 50 cents a bushel and selling the hogs at \$5.00. When the hogs were figured at \$6.00, the profits ranged as high as \$154.00, that being credited to an acre of rape forage.

Altho one trial of rape showed such unusual profits, the experimentalists consider alfalfa to be the best forage crop for pigs. It may be counted on for the cheapest gains per pound and it meets a good many other demands that rape does not satisfy. The various forage crops netted the following acre profits, (counting hogs at \$5.00 and corn at 50 cents):

Alfalfa in 1911, \$65.99; red clover in 1909, \$32.34, in 1910, \$34.62; rape in 1909, \$27.50 and \$27.72; in 1910, \$37.51, and in 1911, \$80.37; sweet clover in 1910, \$42.07, 1911, \$23.46; a mixture of oats, clover and rape in 1909, \$32.30; a mixture of oats, Canadian field peas and rape in 1909, \$22.83; in 1911, \$39.52, \$53.45 and \$64.63; and blue grass and timothy in 1909, \$15.23.

#### EXPERIMENTS WITH PIGS

The Office of Experiment Stations of the Department of Agriculture has received a report of feeding experiments with pigs conducted by the Montana Experiment Station.

The increasing price of grain, says the report, has made pork production more costly and the aim in the experiments was to find the combinations of grain or of grain and forage that will grow pork most economically. Some years there is considerable frosted grain and it is important to know how to feed it. The wheat used in the experiments reported was frozen in the dough stage, and, while of little or no value for milling, was considered of possible value for feeding purposes.

The animals used were high grade Berkshires, Poland Chinas, and York-

shires, that were bred and raised by the experiment station. They were fed twice a day, morning and evening, and given all that they would eat up clean in a reasonable length of time. The grain was ground and usually soaked for twelve hours previous to feeding; the skim milk was fed with the grain; the roots were chopped and the forage was fed in racks or troughs, both being given after the grain was eaten.

In the feeding trials with shorts, barley, and frosted wheat, each with sugar beets, the shorts ration produced the most economical gains. Rations of frosted wheat and sugar beets, and frosted wheat, shorts and sugar beets, were not as efficient as shorts and sugar beets. The ration of frosted wheat and beets was made more efficient by the addition of shorts. Shorts as a single food or shorts mixture was more efficient than barley, frosted wheat or frosted barley, each fed alone or in combination. Wheat frozen in the advanced dough stage had nearly the same feeding value as unfrozen wheat. Adding alfalfa hay to rations of shorts, frosted barley, or a ration of equal parts of these two grains, did not change the relative value of the different rations. Alfalfa hay added to a ration of shorts and skim milk increased the gain and decreased the cost of production. Of all the single grains fed,

none on the average gave better results than shorts.

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HOGS & SHORT HORN  
CATTLE FOR SALE. NOW  
BOOKING ORDERS FOR  
SPRING PIGS OF THE  
BEST KNOWN BREEDING**

### WHITE DENT SEED CORN FOR SALE

Booking orders for Barred Plymouth Rock Eggs & Mammoth Bronze Turkeys

**Stock for Sale at all times. Pedigree  
Furnished. Write your wants to**

**C. H. SCHUTT  
R. R. 1, Fairmount, N. Dak.**

### ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN Comparison of the Origin and Disposition of Livestock for April, 1913

Origin of Livestock Received						
States	Cattle	Calves	Hogs	Sheep	Horses	Total Car.
Minnesota .....	20939	9751	70074	6368	99	1906
Wisconsin.....	2510	1472	7721	34	6	206
Iowa.....	104	6	560	.....	35	15
Far South.....	70	.....	.....	.....	85	7
South Dakota.....	695	86	3107	293	20	75
North Dakota.....	3970	712	8555	557	20	271
Montana.....	786	1	160	7198	1	69
Far West.....	.....	.....	.....	.....	.....	.....
Manitoba & N. W. T.....	.....	.....	.....	.....	1	1
Far East.....	.....	.....	.....	.....	.....	.....
Returned.....	59	1	.....	.....	.....	2
Totals.....	29133	12029	90177	14450	267	2552

Disposition of Livestock						
So. St. Paul P'k'rs.	9588	7366	68395	13308	.....	.....
City & State Butch.	617	115	155	186	.....	23
Outside Packers...	.....	1434	21118	.....	.....	200
Minnesota.....	4515	497	90	607	123	160
Wisconsin.....	2420	78	.....	267	44	86
Iowa.....	5040	395	.....	343	18	163
Nebraska.....	218	202	.....	.....	1	12
Kansas & Missouri .....	.....	.....	.....	.....	.....	.....
South Dakota.....	4024	739	.....	.....	.....	118
North Dakota .....	1455	104	.....	.....	34	37
Montana & West.....	.....	.....	.....	.....	.....	.....
Far South.....	611	101	.....	.....	.....	20
Manitoba & N. W. T.....	.....	.....	.....	.....	.....	.....
Mich. & E. Can. ..	55	3	.....	.....	3	4
Chicago.....	1068	1	.....	11836	.....	99
Ills. (ex Chicago)...	1638	93	.....	.....	20	58
Eastern Points.....	50	.....	.....	.....	20	3
Returned.....	.....	.....	.....	.....	.....	.....
Totals.....	21711	3762	21362	13236	263	983





## Poultry Department



### MISTAKES OF THE BEGINNER

Michael K. Boyer

It is well for the beginner to accept the advice of men who are veterans in the service, in order that they may avoid many of the stumbling blocks.

Too many novices start on too large a scale. They are not content to begin at the bottom round of the ladder and gradually climb to the top. That is too slow for them. If blessed with sufficient capital they are pretty sure to start on a large scale. Without experience, is it any wonder they do not succeed?

But this is not the only cause of failure with the beginner. The others might briefly be stated as having too much land; buildings too scattered, entailing too much unnecessary labor; the breed or breeds selected not being suitable for the purpose intended; houses not built upon the sanitary plan; too much changing of the bill of fare; unmindful of small details; harboring too much unprofitable stock; carelessness in caring for ailing birds; relying too much on hired help; and learning too fast.

It is a waste of money to buy too much land. From five to ten acres is sufficient for the largest kind of plant.

A general mistake is the continual changing of the bill of fare. There should be one system in feeding, and that regularly followed. The bill of fare should contain the greatest variety possible, but the system should not be changed. New articles of food should not be given to the exclusion of others until the fowls have had a chance to become acquainted with them. All additions or changes should be gradually made. If the fowls are doing well on what they are getting, no change should be made at all.

Probably the most common error is "learning too fast." It is a noteworthy fact that, as a rule, by the close of the first year the beginner forms the opinion that he knows it all. Thirty years spent in the poultry yard has taught the writer that he has much yet to learn. There is always something new turning up.

The wise men read, study, practice, and investigate, thus daily adding to their store of knowledge.

Beginners must go in to win. They must not become faint-hearted. They must put their shoulder to the wheel. In all occupations the successful ones are those who stick to their work.

There will be dark clouds—it is so in all businesses. There will be days of discouragement, but the wide-awake man battles right along, never tiring, never

getting the "blues." He knows that "every cloud has a silver lining," and that the sun will surely shine some day.

The poultry business wants men with pluck.

### POINTERS

Beware of the hidden nest. It is not uncommon for farmers to take the eggs from a hidden nest and put them in the fresh egg basket. As one has no way of knowing the age or condition of such eggs, there is a great risk in such a procedure.

The nest egg theory is out of date. There used to be an old-time belief that it was necessary to have nest eggs in order to induce the hens to lay. There can be but one virtue in the nest egg, and that is to teach the hens to lay in particular nests, but the nest egg has no influence whatever on production.

Assorting market eggs according to size and color is a good business move. It attracts the eyes and the appetite of the buyer, and the sale is readily made. It always pays to cater to the whims of the buying public, notwithstanding what our personal ideas may be.

It pays to cater to the whims of the market. Personally we do not believe there is any difference in the quality of a brown-shelled egg and one with a white shell, but at the same time we would no sooner think of sending a consignment of brown-shelled eggs to a white egg market than we would roasting fowls to a man who asks for broilers.

I. K. Felch says utility must not be forgotten. No breed that fails in practical points can long stand well in popularity. And the practical points are: Great productiveness in eggs, even colored, even-shaped, generous-sized eggs, and the

greatest possible increase of weight for food consumed.

There is only one way to build up a heavy-laying strain, and that is to select hens that are good layers, and, if possible, that come from a line of good layers, and to them a male bird that is known to be the "son" of a good layer. This work is possible only by the use of trap-nests.

Here are a few hints to those who are in the business of raising market poultry: Market the roosters separately. Aim to attract the eye of the buyer. Have regular market days. Try to build up a reputation for prime stock. Grow bone and muscle first, and then fatten. Big-combed broilers are apt to be wrongly classified in market. Always notify your commission merchant before shipping. Young fowls shipped with old stock will command old stock prices. Poultry should be killed the day before marketing when going direct to the consumer. Do not mix white-skinned chickens in the same shipment with yellow-skinned ones. Have a tag fastened on each fowl you send to market. It is the best way to advertise your stock.

### A CORRECTION

This paper was in error in stating the weight of the different varieties of geese. Correct weights, according to the American Standard of Perfection (which was revised in 1910) are as follows: Toulouse—adult gander, 25 lb.; young gander, 20 lb.; adult goose, 20 lb.; young goose, 16 lb.; Embden—adult gander, 20 lbs.; young gander, 18 lb., adult goose, 18 lb.; young goose 16 lb.; African—adult gander 20 lb.; young gander, 16 lb.; adult goose, 18 lb.; young goose, 14 lb.; Chinese—adult gander, 12 lb.; young gander, 10 lb.; adult goose, 10 lb.; young goose 8 lb.; Canadian have the same weight as the Chinese; Egyptian—adult gander, 10 lb.; young gander, 8 lbs.; adult goose, 8 lbs.; young goose, 6 lbs.

NOTE. The weights given are taken from the latest "Standard." The Standard of 1910-1915. A Standard holds good only for five years, when a revision is made.

## A GOLDEN OPPORTUNITY

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Eggs for Hatching from my

### BARRED ROCKS OF QUALITY

\$1.00 a setting or \$6.00 a 100

Send for catalogue and mating list.

E. W. WILSON, - LAMORE NORTH DAKOTA



The Oklahoma Agricultural Experiment Station some years ago made feed trials that are worth calling attention to. They found that poultry digested Kaffir corn and corn more completely when the grain was fed whole than when the meal was fed. The Kaffir corn and the Kaffir meal fed yielded but two per cent less total digestible matter than the corresponding corn products. Kaffir corn was a more suitable ration, considering only the relative amounts of growth-making and fat-producing materials than Kaffir meal, corn or corn meal. Cowpeas were digested reasonably well, and are desirable for growing chickens and hens. But little gain in digestibility was secured by grinding the cowpeas. The reason that cowpeas are good food for laying hens is that they contain about two and one-half times as much nitrogenous matter as corn or Kaffir corn. The productions of egg require a food that is rich in nitrogen. For this purpose, meat scraps and similar materials are fed.

A poultry lecturer in Scotland some years ago, in an address on the rearing and general management of chickens, said, on the subject of food, he would give a "wrinkle" worth its weight in gold. At three days old the chickens were qualified to eat pretty nearly anything, but he warned them against the practice of feeding the chickens on soaked bread. They should adopt the following plan: Fill a little linen bag half full of rice, put it into water and let it boil five minutes. They should then withdraw the bag, and let the water drain away and they would find the rice whole and separated. A handful of oatmeal should be mixed with the rice and it would absorb all the moisture. This the chickens should be allowed to pick up for themselves, but they should not have too much.

What are the most prominent qualifications of a roasting fowl? Casey says, weight, fibre and color of flesh. Perkins says, not overfat carcass; medium short legs; compact, plump body; yellow skin and yellow legs. McFetridge says depth and breadth of breast, short legs, short back; in fact, they should be chunky and compact, with abundance of muscle, the heavier the better. Brown says the head should be short and broad; the neck short; the breast broad and deep, well-rounded and full down to the bottom; the back short, broad, and prominently flat at

shoulders; legs short, with well-developed thighs, clean, free from feathers, and bright yellow; the skin yellowish white, shade or two lighter always than the color of legs. Rudd says, compact, plump shape, with abundant breast meat, and sides which afford good slices; not too leggy, but with heavy thighs which will furnish good "second joints," regarded by many the best part of the chicken. Davison says, a full-breasted, plump carcass; a bird that carries the most white meat and the least offal; good size; breast tapering off from front to rear, wedge shape; the bone should be small.

Some years ago Professor James Dryden delivered an address before the Utah Farmers' Institute, from which this extract is worthy of reproduction:

A short study of the composition of wheat and of eggs will explain why a profitable egg yield cannot be expected from wheat alone. Supposing you feed a hen which weighs 3.5 pounds, 3.25 ounces of wheat a day. Of course a hen of that weight would not long consume that weight of wheat alone. Supposing, further, that the hen uses 2.75 ounces of that for the maintenance of the body; that leaves half an ounce to be converted into eggs, assuming that all the food is digested, which of course is not the case. In half an ounce of wheat there is about .06 of an ounce of protein. So that, assuming that the hen consumes and digests 3.25 ounces of wheat per day, and that she uses 2.75 ounces of that for maintenance of the body, there is available each day just one-fourth enough protein for an egg. In other words, it will take four days to get enough protein for one egg. But the egg has other constituents; so has wheat. The half ounce of wheat contains about one and one-half times as much carbohydrates and fat as one egg contains. The hen fed on wheat alone has a surplus of one material and a deficiency of another. In other words, she has enough carbohydrates and fat to make an egg and a half a day, but has only protein enough to make one egg in six days. You place the hen in an awkward position by feeding her wheat alone. Wheat does not contain the egg making materials in proper proportion. Corn is even worse than wheat in this respect.

North Dakota Farmer: Fifty Cents a year; 3 yrs., \$1.00. Agents wanted.



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**HATCHING EGGS** of the Leading Strains and of the Prize Winning kind. Mamouth Bronze Turkeys, 12 Eggs \$1.50 Barred Plymouth Rock 15 Eggs, \$1.50; 50, 3.00; 100, \$5.00. **SEED CORN FOR SALE.** Write all orders to **G. H. SCHUTT R. R. 1 Fairmount, N. D.**

**ELEVEN YEARS A BREEDER** Pure-bred poultry: White Wyandottes, Toulouse Geese, Bourbon Red Turkeys and Pearl Guineas. Stock for sale. Write me your wants. **E. A. TOW, R. R. 3 LISBON, N. D.**

**EGGS FROM BUFF ORPINGTONS AND S. C. RHODE ISLAND REDS** at special low prices. Bred to lay. **F. M. PEZALLA, Cayuga, N. D.**

**BARRED ROCKS** Bred to Lay and Win Won all first at Fargo, N. D. State Show, 1906, 1907, 1908, 1909 and 1911. Stock at reasonable prices. **PETERSON BROS. Harwood, N. D.**

**HAUSMANN POULTRY FARM** Breeders of W. Wyandottes and S. C. W. Leghorns Hillsboro, North Dakota

**EGGS FOR HATCHING.** White Plymouth Rocks (Fishels Strain) \$5 per 15. I have the Best in the Northwest. No exceptions. **Indian Runner Ducks** from Choice High Bred Stock, \$2.50 per 11. **Canadian Wild Geese**, \$1 per egg. **C. H. MCGEE Oriska, N. Dak.**

**WHITE WYANDOTTES.** If you want eggs from an early maturing, heavy laying, prize winning strain of White Wyandottes write me. I am developing a special laying strain by use of the trap nest. Prices reasonable. Write **M. C. JAMES, Valley City, N. D.**

**MAKE YOUR HENS LAY MORE EGGS** I have a method that will make your hens lay every day; it never fails. Write for it. 2c stamp. **MRS. B. F. WILCOXON, North Platte, Neb., Dept. 8**

**FOR SALE.** M. B. Turkey Toms, raised from our Diploma Stock, \$5.00 and up; also Eggs from 20 varieties poultry. Catalog free. **L. GULDEN, Osakis, Minn.**

Silver-Laced Wyandottes, Thoroughbred, Wide Open Laced, Big Utility, Winter Laying Birds. Bred for Business. Eggs for Hatching: 15, \$1.50; 30, \$2.75; 50, \$4.00; 100, \$7.00. Satisfaction Guaranteed. **Anthony Elm - - - Lansford, N. Dak.**

**EGGS FOR HATCHING** via Parcel Post or Express from all varieties: Rocks, Brahmas, Wyandottes, Leghorns, Orpingtons, Reds, Cochins, Bantams, Guineas, Geese, Turkeys, Ducks, Pigeons. Also Angus Cattle, Ponies, Duroc Jersey Hogs, Dogs, Cats, Rabbits, Pets. Wanted: Young Foxes. **ENVILLA STOCK FARM Cogswell, North Dakota**

## REDUCED PRICES ON EGGS

For the months of June, July and August, only, we will sell White Wyandotte, Columbia Wyandotte and S. C. White Leghorn Eggs at \$1.25 per 15; \$3 for 50; \$6 for 100. For Light Brahma Eggs, \$2 for 15; \$3 for 30. Address,

**Michael K. Boyer, Box 17 - Hammonton, New Jersey**

## KARL THOMTE BREEDER OF - - - ROSE COMB RHODE ISLAND REDS LISBON, NORTH DAKOTA

I won 1st Hen, 1st Pen, 2nd Cock, 3rd and 4th Pullet at State Poultry Show, Fargo, N. D. January 10-17, 1913.

Will send stock on approval. Let me hear from you early. February 1st I got 46 eggs from 75 pullets after three days of 20-below-0 weather. No artificial heat used.

Hens and pullets, each.....\$1.00 to \$2.50  
Cocks and cockerels, each.....\$1.50 to \$5.00  
Pens of six birds.....\$10.00 up  
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### EGGS FOR HATCHING

1st Pen.....\$2.00 for 15 or \$6.00 for 50  
2nd Pen.....\$1.50 for 15 or \$4.50 for 50  
3rd Pen \$1.00 for 15, or \$3.00 for 50; \$5.00 for 100



As the duck has no crop, it does not assimilate and thrive on whole grain.

It is not altogether what a hen eats that makes eggs and flesh, but rather what she is able to digest and assimilate.

To prevent bureau drawers from sticking, rub the wood with common soap or what is better get what is known as "bagwax" from the druggist. This is the very best of lubricants.

Putting an orange, an apple or a lemon in the jar with small cakes or cookies or in the cake-box will impart a delicious and delicate flavor. The dried orange or lemon peel will serve a like purpose.

Fresh brown bread is always hard to slice. It can be easily done in this way: Pass a clean white string around the loaf, cross the ends, then pull it to its full length. This makes a clean cut and no bread is wasted.

Feather pulling may be checked by dissolving powdered aloes in water and washing the feathers of the birds that have been plucked. This renders the feathers distasteful to the culprits that do the plucking. Bran moistened with vinegar is said to cure the habit in hens that have contracted it as a result of indigestion.

The causes for sickness among fowls can be traced to lice, filth, no grit, overfat, sour food, leaky roofs, lack of exercise, crowded quarters, cracks in the wall, exposure to hot suns, cold houses in winter, hot houses in summer, irregularity in feeding, damp houses and runs, not enough bulky food, impure drinking water, poorly ventilated houses, exposure to bad weather, and too much food (heated) in summer.

A "Standard-bred" fowl and a "Pure-bred" fowl are not necessarily the same. A bird may not be up to the Standard qualifications and yet be a purebred. But a Standard-bred is bound to be a purebred. Utility poultry are fowls bred

for increased egg and meat production, and while they are pure in blood may be way off in markings from a poultry show point of view. No fowl can be a successful utility bird unless it is purebred.

When the fattening season arrives, according to an experienced goose raiser, keep the fowls shut away from bathing water, and feed barleymeal, cornmeal and beef scraps and some chopped celery. Keep them in a subdued light for three or four weeks, when they can be let out for a couple of days to enjoy the use of a pond. Then return to clean quarters, and feed on barleymeal, and milk, and chopped celery, for two or three days, letting them go 24 hours before killing.

When lice and mites are present you feed in vain. "Verily the path of the brooder chick is strewn with thorns" if you do not give them constant care. As has been truthfully said, "It is one thing to hatch the chicks, but another to raise them." I don't claim to know it all—far from it—but there are a few things that I have found out by experience and can claim as my own. I have been in the harness long enough to discover that I am only yet a student and there is not a day but up will crop facts that I never before dreamed of.

Togetmeir, the famous English authority, says in England ducklings are bred for the London markets as early in the year as possible. At Christmas time, in the neighborhood of Aylesbury, as much as 12s per dozen will occasionally be given for eggs of good Aylesbury ducks, in order that the ducklings may be reared and fattened early, for in the spring months

from 12s to 15s a couple is no uncommon price for good Aylesbury ducklings. Formerly the struggle was to get the ducklings ready for the peas; now the position of things is reversed, and the difficulty is to produce the peas to accompany the early ducklings. The birds to yield the high prices named, are reared and fattened in many cases in the laborers' cottages, are never allowed to go into the water, are forced upon mixed vegetable and animal food, and are killed at from 8 to 10 weeks old, before they have molted a single nestling feather. The meat is tender, the flavor delicate, not at all resembling that of the wild duck.

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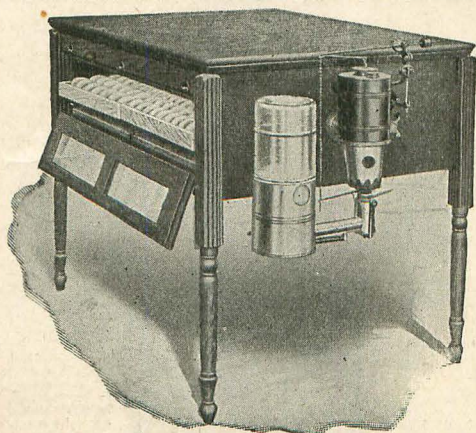
Write for descriptive circular. Address, W. F. Holcomb, Mgr., Nebraska Poultry Co., Clay Center, Nebraska.

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It is an Automatic Incubator, as it has an automatic lamp, regulator, ventilation, moisture and heating system. It is the incubator that hatches good, strong, healthy chicks with less labor and less expense than any other incubator on the market.

We also have purebred chickens, including Dark Brahmas; Black, Buff, White, and Partridge Cochins; White Leghorns; S. S. Hamburgs; Blue Andalusians; W. F. B. Spanish; Pekin and Rouen Ducks; Embden and Toulouse Geese; M. B. Turkeys, and White Holland Turkeys. Eggs for hatching. Write for free catalogue.

C. H. Ahrens

Fargo, N. D.



## School and Home

### WASHING CLOTHES

Mrs. W. C. Palmer

The necessary utensils for washing clothes are a wash boiler, two butts, a wringer, washing machine, wash-board, clothes stick, clothes basket, soap, plenty of clothes pins, and water.

The clothes are sorted for two reasons; first, to put aside all articles that have stains to be removed along with those that need special attention, second, to separate the table linen with other white clothes from the colored, the towels in one pile, and the body clothes from the stockings. Soaking the white clothes in soapy water, warm enough to bear the hand, from 15 to 30 minutes will make the washing easier. The table linen is washed first, then the bed linen with the white body clothes, the handkerchiefs, the towels, the woollens, colored clothes and stockings last. To wash, soap each piece thoroly and wash on both sides (if to be done by hand). Pillow slips are washed on the right side and turned as well as such garments as dresses, underwear and the sleeves in shirts and waists. The object in boiling clothes is to sweeten, to remove dirt and to help keep them white. Judgment must be used while doing it as too much boiling will yellow clothes, as will also too much soap. Clothes that are slightly soiled need only scalding. Those that are very dirty should be boiled from 5 to 10 minutes. Have plenty of water in the boiler and do not put too many clothes in at one time, as they need plenty of room so they can be stirred well. Put on the first boiler full, in cold water, adding enough shaved soap to make a medium suds. Rub soap on soiled parts of the clothes before putting in boiler and allow to come to a boil. To the next boiler of clothes add more water and soap. Rinse the clothes if very much soiled in two waters, sousing them well, then thru one bluing water. If the clothes are not very soiled one rinse water is sufficient. Wring the clothes as free from water as possible as they will be much softer, while if there is much water left in, they will be stiff and often have a dingy look. In washing colored clothes the first time, if the colors

have not been set, do so by adding a piece of alum the size of a small egg to two gallons of water or two cups of salt to one gallon of water. Allow clothes to stand in one of these solutions for a few hours before washing. Colored clothes will not stand soaking, boiling, hot water or very much soap as these very often loosen the colors when otherwise they would be fast. They should be washed quickly as possibly and the best garments washed one at a time and dropped into clear cold water. Never add bluing to the last water for dark pieces as it gives them a muddy look, especially pink, lavenders, yellows, and greens. Starch on the wrong side and hang in a shady place to dry.

To make starch, mix one-half cup of starch with cold water to make it smooth,

selves as indispensable to the farmers, on account of the market they afford him for his grain. But investigation shows that only a very small part of the farmers' total products are taken by the breweries and distilleries. For instance, during the fiscal year ending June 30, 1911, 114,508,855 bushels of barley, wheat, rye, corn and oats were used in making alcoholic liquors. But the farmers raised, during the year 1910, a total of 5,143,187,000 bushels of these same grains, and this shows that the liquor traffic uses less than two and a half per cent of the five leading grain crops of the land. For every bushel of grain used by the breweries and distilleries more than forty-four and three-fifth bushels are used for legitimate food purposes. **Out of every one hundred dollars' worth of grain sold by the farmer the brewer and distiller buy about \$2.255 worth.**

The liquor interests have long tried to create the impression that if the liquor traffic is abolished one of the markets for grain will be destroyed and the farmers will suffer. But common sense tells us that



A Class in Cooking at the Agriculture College

add one quart boiling water, boil until thick as cream; add small piece of paraffin so the iron will slip over the garment easily. Starch the pieces that require the most stiffening first, thus the starch will be thin enough for those that require less starch. Woollens are never soaked, and should be washed in luke-warm water with a good suds, rinse thru two warm waters and shake well, pulling them back to shape, and hang where they will dry as quickly as possible. Stockings should be washed on both sides and rinsed well in clear water.

the closing of the distillery and brewery would set at liberty a large amount of capital and labor which would be diverted to other channels of business, including among other things the development of produce and its adaptation to the wants of the people. Many millions of dollars now expended in liquor would be expended in farm produce of various kinds. There is a large proportion of our people who do not consume as much of our farm produce as they need and desire, because of the waste of wealth in the consumption of intoxi-

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### THE FARMER VS. THE LIQUOR TRAFFIC

By Prof. John A. Nicholls

The manufacturers of intoxicating liquors quite frequently represent them-

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cants, and if this waste ceased, the demand for farm produce would at once increase.

### THE RELATION OF GEOLOGY TO AGRICULTURE

Herbert A. Hard, Geologist, North Dakota Agricultural College

The relation between the sciences of geology and agriculture is a very deep and basic one. The contact is so intimate that the most unthinking farmer must daily make it, but only the most intelligent are able in any large measure to appreciate its significance. The wide-awake and successful farmer is rapidly coming to understand the above relation and to put into practice its benefits.

Just what is this relation? In the first place the very origin of all soils is geologic in its nature. It would require a large book to take into account the natural geologic forces, processes and tools in the complex action in preparing sandy soils from sand-stone and quartzite or clay from shale and slate, and tracing these in turn back to the parent granite thru a maze of interdependent chemical and physical activities.

Take one concrete example. Lava rock on examination appears to be about as incapable of supporting plant life as any possible substance. Let it be subjected to the natural forces of chemical decay and it yields the soil of the great wheat "granary" of Washington-Oregon, or of the fertile Dekkan of India.

Or another: limestone often added in fertilizing seems more capable of weather-

ing to a fertile plant food. Thus is yielded the celebrated "blue grass" soil of Kentucky. This component is one cause of the great fertility of the so-called "drift" soils of the northern United States. The ancient glacier left these drift soils over Canada and, roughly, as far south as the Ohio and Missouri rivers.

The practical question is often asked as to why the soils of the northern United States are so productive. At least four reasons are clear to the geologist.

1. The ice sheet ground the rock so fine, making the texture good and the minerals available.

2. The rock thus ground up comprised all possible varieties of rock, including limestone, insuring all the desirable mineral foods.

3. This blanket of soil thus spread out, while old enough to have all the processes of rock decay and food preparation under way, is still so recent as to insure the potash and phosphorus from being all leached out. And in this rock decay, few farmers are aware that new food is each year unlocked from the rock composition of the soil. The soil is self-fertilized as it were. Thus with good treatment of the soil, maintaining the proper soil sanitation many good soils need but little commercial fertilizer added, stable and green manure alone being needed.

4. The organic matter content of the drift is high in its virgin state. With proper additions as stated, it may be kept sufficient.

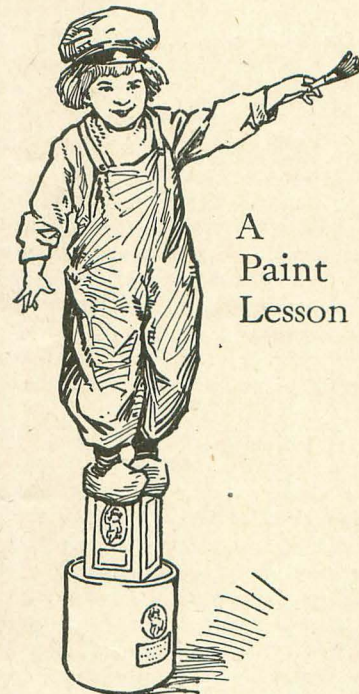
These statements of soil composition all point to the question of fertilizers and soil amendments. True, there are those soils, in some eastern states more especially, but some in the Dakotas, originally lean, and many other so badly "run down" by mismanagement or using the one-crop system as to require commercial fertilizer. I ere again, the geologic origin, determining the composition, as shown by physical and chemical analysis, the origin in conjunction with the topography and the altitude, etc., may indicate the amendment and crop system required. The exact chemical analysis generally fails to indicate the quality of the ordinary soil altho helpful in the instances cited. However, the system of physical examination and analysis as made by the Agricultural College Geological Department Survey and by the Federal Soil Bureau is so planned as to quite accurately determine the land value on every soil type which is not less than ten acres in extent.

This classification is based on soil texture, i. e., size of particle, kind of mineral, physical condition, organic content, topography (lay of land), geologic origin, (drift, river, alluvium, lake floor deposit, residual rock product, etc.), and many other considerations.

The soil map is a geologic map; properly worked out, it indicates within a few dol-

lars the land values and points to the correct cropping system. Valuable on the extensive farming system of the prairies it is even more so in eastern and mountainous regions of intensive farming.

In many special soil provinces notably in California and in the Appalachian states, the Soil Bureau has been able not only to determine the species of plant for a given soil type but also the definite variety peculiarly fitted to it. Often the balance of soil composition and the altitude is so delicate that a varietal difference in grain



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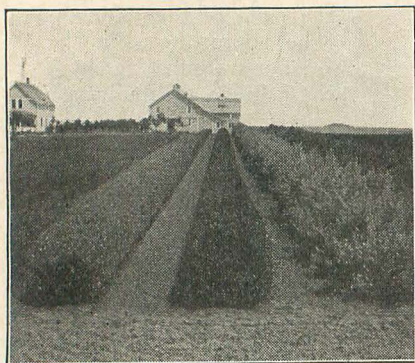
or fruit spells crop success or failure. For example, one California section grows all the table grapes, another grows all the raisin grapes, while to the close boundaries of another soil type the wine grape is restricted.

Thus the Soil Survey, mapping the soils, is of inestimable value in the agricultural development of all sections as it points to the true nature of the soil and its crop adaptability.

Another respect in which geology has a practical bearing for the agriculturist is in the study of the ground water table, not only as it relates to the level for wells but also for plant roots. The height to which the water rises in a given locality has a very simple and direct relation to the surrounding topography or contour of the land, the texture of the subsoil, structure of the soil, and a dozen other kindred geological and geographical facts.

We cannot think of a completely successful agricultural community without good roads. The geological occurrence and the recognition of good materials is of prime importance to the farmer. Each county mapped by the Soil Geological Survey will hereafter have a map and report on the road materials contained therein.

The successful farmer is a true business man. Farming must be considered as a real business. It would belittle this interpretation of farming to say that the farmer is not directly interested in the geological nature and qualities of coal, clay and cement-forming materials. Especially is it true in the last instance, as sand and lime are becoming more indispensable on the farm for cement and concrete tanks, troughs, posts, silos and foundations.



Russian Willow and Russian Wild Olive Hedges, Edgeley Experiment Station

#### INFLUENCE OF AGRICULTURAL BULLETINS

Mention has been frequently made of the agencies that affect the progress of the farmer—bulletins of the Department of Agriculture and of the experiment stations,

farmers' institutes, agricultural press, etc. In that statement the fact was referred to that 43 per cent of the farmers visited received state or department bulletins, or both, either regularly or occasionally. Of this number 84 per cent read the bulletins, 56 per cent saved them, and 48 per cent practiced some ideas obtained from them—about one farmer in every 5 was being benefited directly by the agricultural bulletins. These data would seem to refute the assertion that the bulletins are not read by farmers. They are read by them, and furthermore the bulletins are of benefit as attested by the fact that 6 out of every 10 who read them put some of their teachings into practice and could give concrete examples of such practice. This influence of the bulletins, it must be remembered, is only the direct influence. The indirect influence—their use as a basis for articles in the agricultural press and as material for books and for lectures at farmers' institutes, and other farmers' gatherings, thus securing wide publicity—is undoubtedly equally large or larger than the direct influence. Most every farmer stating that he had been benefited by

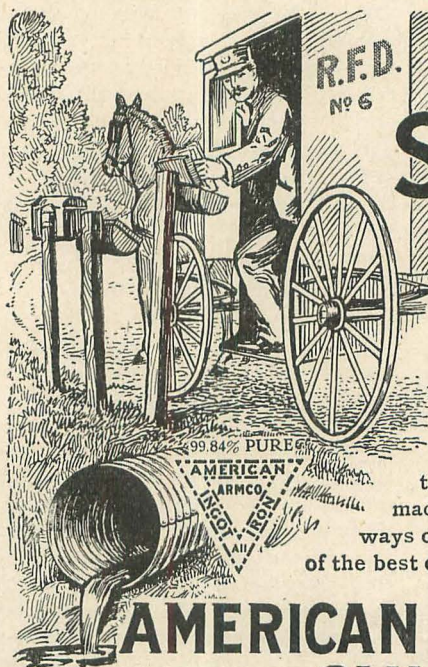
bulletins was able to state specifically some definite thing that had been done as a result of such reading. The Department of Agriculture has compiled a list of benefits derived by farmers from the bulletins and these range thru the whole science of agriculture from conserving the moisture by tillage, the home mixing of fertilizers, spraying, crop rotation, construction of farm houses, down thru every problem and every little detail that the modern farmer must meet and solve for himself.

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**Publisher HIGHWAY MAGAZINE**

534 Walnut Street

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These figures may and should be accepted as very conservative because it was found that there was a hesitancy on the part of the farmer to admit having received help from any source other than experience. The most surprising thing encountered during the course of the investigation was the fact that 1,616 farmers out of the 3,698 visited claimed that none of the agencies enumerated was of any benefit and that only experience in farm work counted. No doubt had the investigation been carried further it might have been ascertained that these were the least prosperous.

#### LIVESTOCK PREMIUMS

##### One Hundred Dollars Will be Offered in Futurity Cattle Class in 1915

The gift of \$100 from E. W. Becker, president of the Northwestern National bank of St. Paul, to be offered in the futurity cattle class at the 1915 state fair was announced by Secretary Moore last night. The question of the manner of awarding the prize has been referred by Mr. Moore to the various cattlemen of North and South Dakota to work out a plan which will be most satisfactory. Among the questions to be decided are whether the money shall be offered in the beef or dairy division and the age for which it shall be offered.

The object of the prize is largely educational. It is hoped by offering the prize to be awarded two years hence that better systems of feeding and caring for cattle may be developed among the cattle men of this section.

Mr. Becker has been very active recently in encouraging the raising of more cattle on the farms of the northwest. He is the head of the bankers' organization to promote such an object and has made valuable investigations along the line of the value of cattle on the farms and of the cost of feeding them. The gift to the local association is evidence of appreciation for the work that it has done in promoting the raising of better cattle. Not only the value of the prize but the honor of winning such an event will doubtless prove a strong incentive to many cattle raisers to use more scientific methods.

#### Working on Premium Lists

Work on the premium lists for the 1913 fair is progressing rapidly. Copies of the premiums as made out under the direction of Secretary Moore have been referred to the superintendents of the several departments for correction and revision. When this is completed the copy will be turned over to the printer.

The premium books will be very attractive this year but the premiums will be very much more so. There will be a substantial increase in the value of the prizes offered and this will help materially

in making the 1913 fair what the officers and directors promise will be a little better than the best of the six successful ones which have already been held here.

#### HOW TO CLEAN ALUMINUM WARE

What is the best way to clean aluminum ware? Aluminum ware may be cleaned by washing in hot water with plenty of soapsuds. It may be polished with a paste of Jeweler's whiting which has been sifted to remove hard particles. Paste may be made with soapy water or water and alcohol, or water and ammonia added to the whiting; spread paste smoothly on surface and polish with soft cloth or chamois skin. Nickel and silver are polished in the same way. Any good metal polish may be used. If the stain is very bad, polish with sapolio. If this fails, discolorations may be removed with a very dilute solution of nitric acid. Never use alkalies such as washing soda or potash in cleaning aluminum.

## Wanted At Once

One representative in each county to solicit subscription. Write for the best offer we have ever made.  
North D. Farmer, Lisbon, N. D.

## A Full Value Blue Serge Suit for 17.50

That will give you satisfaction in style, fit and workmanship as well as in quality. Send in your breast, waist, seat, inside trouser, and sleeve length from center of back to hand, or send for measure blank.

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## Preserving, a Pleasure —with Parowax

Dip tops of jars and catsup bottles in melted Parowax. Or pour this pure paraffine directly on top of contents of each jelly glass. Result—a perfect, air-tight, mould-proof seal that keeps canned vegetables, catsup, chow-chow, preserves and jellies indefinitely.

### No Tins or Tops Needed

It is even simpler than it sounds. It is as cheap as it is easy. No bother with tops that will not fit. Not even paper covers need be used. The direct contact of Parowax with the jelly cannot affect its taste or goodness.

Parowax is tasteless and odorless. It is so thoroughly harmless

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### Indispensable in the Laundry

Parowax cleans and whitens clothes in the wash. It imparts a beautiful finish to them in the ironing. And Parowax has a hundred other household uses. No home should be without it.

Your druggist and grocer both keep Parowax. Order it today.

### Mrs. Rorer's Recipe Book

Ask your dealer for this valuable free book by this celebrated culinary expert. Or send direct to us.

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## Seasonable Receipts

### Jelly Roll

Beat well three eggs, then add three tablespoonfuls sweet milk or cream, one teaspoonful lemon extract, a pinch of salt and one cup flour in which has been mixed one teaspoonful baking powder. Bake in a thin sheet and when done turn it on to a very slightly dampened cloth spread with jelly, then wrap it in the cloth till quite cold. A thin layer of chocolate filling is also very nice instead of the jelly, for a change.

### Delicious Corn Starch Pudding

Scald one quart of milk and one scant cup sugar and a pinch of salt. Beat together the yolks of three eggs, four rounded tablespoonfuls cornstarch and a little cold milk. Add this to the scalded milk and cook until it thickens, then fold in the beaten whites of the eggs. Flavor to suit the taste and serve either hot or cold, with cream. If wished cold, pour it into cups which have been dipped in cold water and it can then be turned onto the saucer for serving and surrounded with whipped cream.

### Baked Rhubarb

After having washed and wiped the rhubarb, cut it into small pieces without peeling. Pack into an earthen baking dish alternate layers of rhubarb and sugar. Add no water, but cover tightly and bake for one hour. Many prepare their rhubarb for canning in this manner. It requires so little attention and can be baking while other cooking is going on on the top of the stove.

### Rice Pudding

Mix thoroly three cups cooked rice, yolks of two eggs and one cup milk. Bake in a medium oven and serve with a sauce made of two cups brown sugar, butter the size of an egg and one-half cup sweet milk boiled for five minutes.

### Vegetable Hints

First, have them fresh as possible. Summer vegetables should be cooked on same day they are gathered.

Second, Look them over and wash well, cutting out all decayed or unripe parts.

Third, Lay them when peeled in cold water for some time before using.

Fourth, Always let water boil before putting them in, and continue to boil until done.

Turnips should be peeled, and boiled from 40 minutes to 1 hour.

### Sour Milk Biscuit

Two cups flour, sifted with one-half teaspoonful soda and one teaspoonful baking powder. Rub heaping tablespoon-

ful lard into this and wet with sour milk, making dough a little stiffer than for baking powder biscuit. Knead well, cut and bake in quick oven.

### Rye Bread

Take two cups white bread sponge. Add two tablespoonfuls sugar, little salt and small piece lard. Mix very soft with rye flour and let rise. When light form into a loaf and let rise to double its size before baking.

### Brown Bread (Steamed)

One cup molasses, one cup raisins, two cups sour or sweet milk. When you use sour milk, one teaspoon soda, or sweet milk use baking powder and soda. Four cups graham flour. Put in three tomato cans and steam one and one-half hours.

### Brown Bread (Baked)

Two cups molasses, one cup sour milk, one cup corn meal, one teaspoon salt, one-half cup molasses, two cups sour milk, two teaspoons soda. Bake in slow oven one hour.

### Pure Cream Ice Cream

Fill a gallon freezer to within four or five inches of the top of can. Add two cups sugar, one tablespoon vanilla and a little salt. Stir until sugar is well dissolved. Freeze.

### Ice Cream

One and one-half quarts cream, five whites of eggs well beaten, one yolk beaten with cream, two cups sugar, two teaspoons vanilla and one of lemon or almond extract. Mix and add enough new milk to fill freezer to one and one-half inches from top, allowing space to swell. Turn

briskly till stiff. Remove inside dash. Drain off water and repack.

### Soup

The meat for soup should be placed in cold water and the impurities skimmed off as they rise. Keep the pot closely covered and boil long and slowly. It is better to make soup stock the day before it is needed.

### Vegetable Soup

A knuckle of veal. Put enough cold water to cover it. Skim. Boil many hours; after meat is tender, put in cabbage, carrots, potatoes, onion, celery, fresh or canned tomatoes (one or two). Cut these all in medium sized pieces, season highly with salt and pepper and serve.

## BAKER'S Breakfast Cocoa

*Is of Unequaled Quality*



For delicious natural flavor, delicate aroma, absolute purity and food value, the most important requisites of a good cocoa, it is the standard.

Trade-Mark On Every Package

53 Highest Awards in Europe and America

Registered  
U. S. Pat. Off.

WALTER BAKER & CO. LTD.

Dorchester, Mass. Established 1780

## Mr Farmer:

Let us prove to you that we can save you money on your grocery orders. We sell direct to consumer at wholesale, eliminating middle profits. Do not delay any longer in becoming acquainted with our prices and services.

Write to-day for our May and June price list.

**FARMERS SUPPLY HOUSE**  
**Dep't D. Fargo, N. Dak.**





## Precious Metals Ground in Linseed Oil

**T**HAT'S what Horse Shoe Brand House Paint is: every gallon of it is strictly pure lead and zinc ground in strictly pure linseed oil.

It's a fact; and when your house puts on a coat of Mound City House Paint it fronts the world, so to speak, in cream, or gray, or tan, or white armor plate.

Strictly pure zinc makes up what lead lacks: strengthens where lead is weak—is harder—whiter—more clear—and beautiful.

White lead is just what its name implies, metal—*soft* metal, of great covering power.

Strictly pure linseed oil is the liquid that binds these natural partners together.

Zinc takes more oil to the pound than lead, and, because "oil is the life of paint" lead plus zinc makes the best paint known.

Baser metals are sometimes used in paints, but their value is unproved—and unless you are willing to lend your two or three-thousand-dollar house as a subject for experiment—better keep on the safe side and buy Mound City Horse Shoe Brand House Paint, which is made of really precious metals, in right proportions, and rightly ground in pure aged linseed oil.

**Mound City Paint & Color Co.**

**Good Makers of Good Paints**

**ST. LOUIS, U. S. A.**

**NORRIS B. GREGG, Pres.**

**WM. H. GREGG, JR., Vice-Pres.**

**E. H. DYER, Sec**



# Watch These Things

*By R. E. Olds, Designer*

**The leading cars this year have these features in them. They are things you should insist on.**

## Left Drive

Practically all the great cars of 1913 have the left-side drive. That means, of course, that others must adopt it.

They don't have projecting side lamps. They use electric set-in dash lights, as used on Reo the Fifth.

They are not under-tired. Skimpy tires, which double one's tire bills, are now much out-of-date.

## Better Parts

Then today's idea among leading makers is to build enduring cars. To cut down cost of upkeep.

The best cars now, for years and years, will run as well as

new. But that isn't so with cars hurried and skimped—cars merely made to sell.

Note what it means to build a really honest car.

Reo the Fifth is built of steel made to formula—steel that we analyze twice.

Its gears are tested in a crushing machine of 50 tons' capacity. Its springs are tested for 100,000 vibrations.

Each driving part, as a margin of safety, is 50 per cent over-capacity.

We use 15 roller bearings, costing five times as much as common ball bearings. We use 190 drop forgings, to avoid the risk of flaws.

A \$75 magneto—a doubly-heated carburetor—tires 34x4.

Parts are ground over and over to get utter exactness. Engines are tested for 48 hours. Cars are built slowly and care-

fully. There are countless tests and inspections.

Every Reo the Fifth marks the best I know after 26 years of car building.

## New Control

And it has the new control. All the gear shifting is done by a single rod between the two front seats. It is done by moving this rod only three inches in each of four directions.

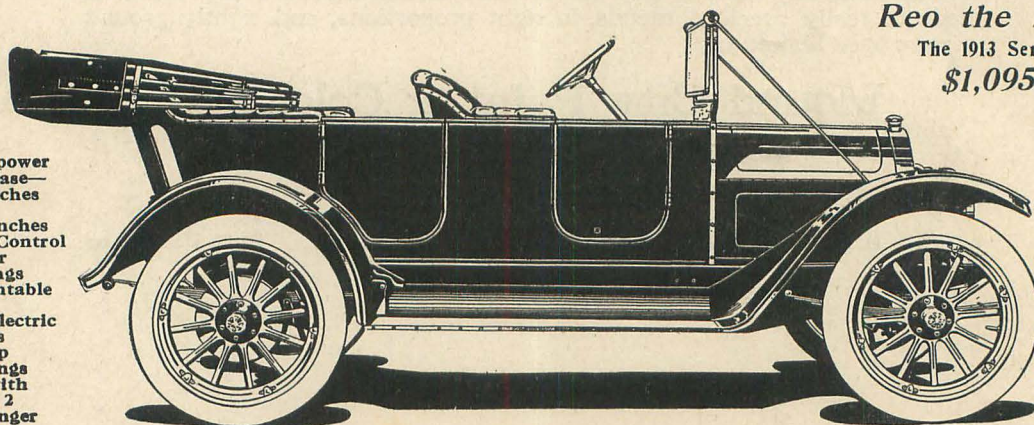
There are no levers, side or center. Both brakes are operated by foot pedals. So both front doors are clear.

Men are coming to cars built like this. Last year's demand was twice our factory output. Every man who buys a car for keeps ought to know this car.

Write for our catalog and we will direct you to the nearest Reo showroom. They are everywhere.

**R. M. Owen & Co.,** General Sales Agents for **Reo Motor Car Co., Lansing, Mich.**  
Canadian Factory, St. Catharines, Ontario

30-35  
Horsepower  
Wheel Base—  
112 Inches  
Tires—  
34x4 inches  
Center Control  
15 Roller  
Bearings  
Demountable  
Rims  
Three Electric  
Lights  
190 Drop  
Forgings  
Made with  
5 and 2  
Passenger  
Bodies



**Reo the Fifth**  
The 1913 Series  
**\$1,095**

Top and windshield not included in price. We equip this car with mohairtop, side curtains and slip-cover, windshield, Prest-O-Lite gas tank for headlights, speedometer, self-starter, extra rim and brackets—all for \$100 extra (list price \$170).  
(Gray & Davis Electric Lighting and Starting System at an extra price, if wanted.)